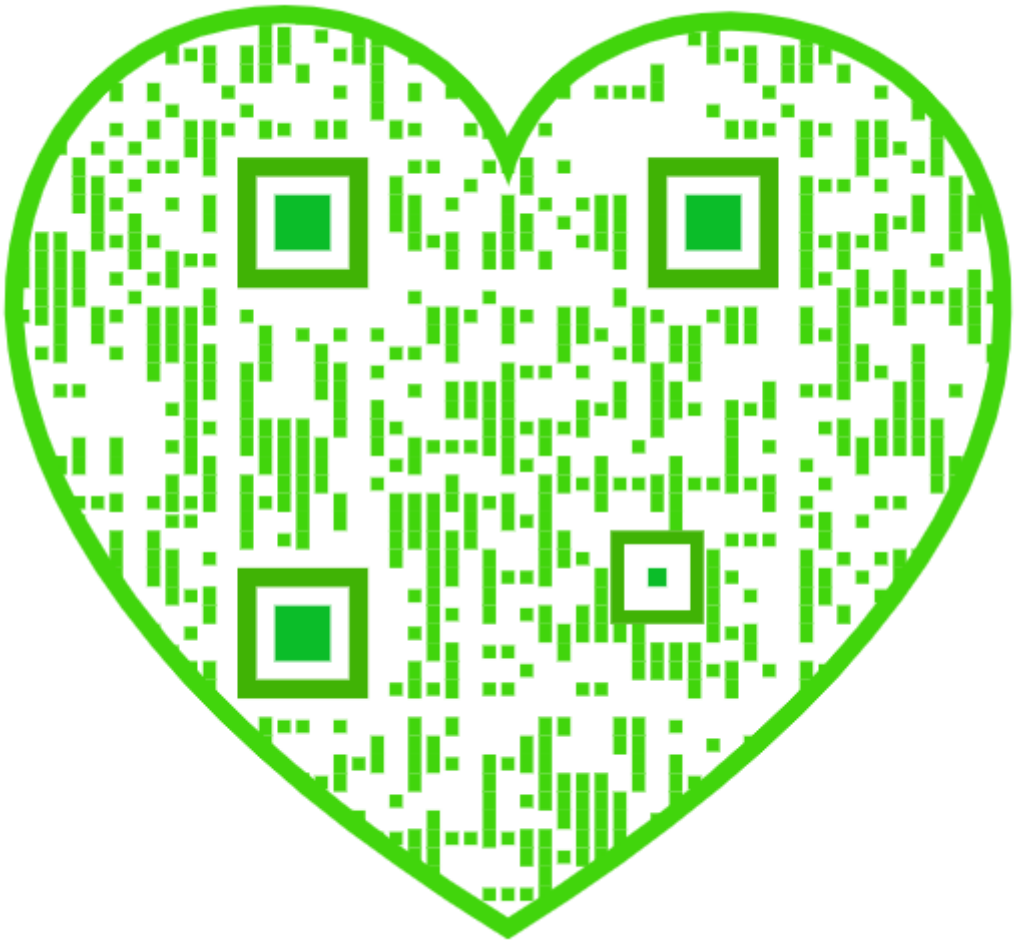

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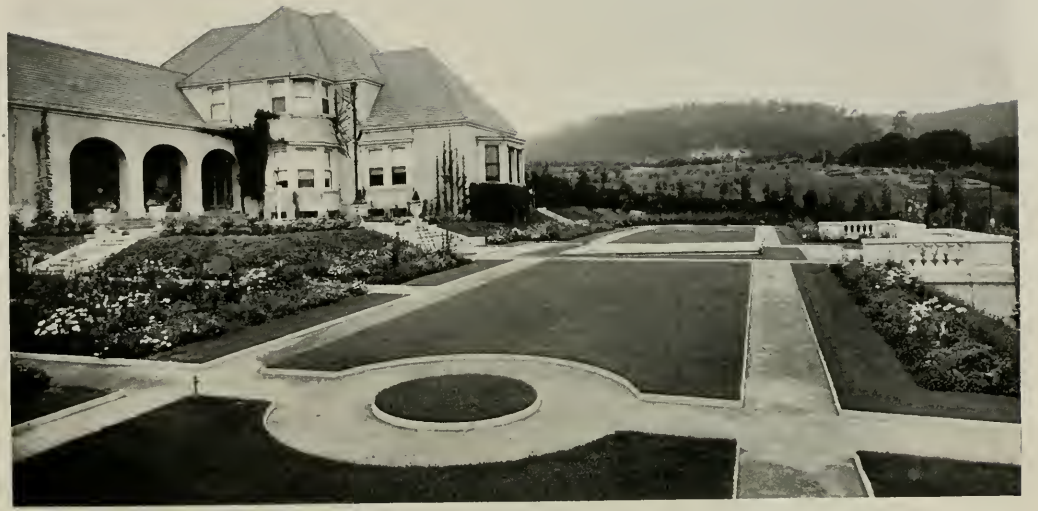

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The Architect and Engineer
of California
for July, 1916.

THE
Architect and Engineer
Of California

VOL. XLVI. JULY, 1916 No. 1.

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Country Homes for City Dwellers

By N. F. HOGGSON.

THE cliff-dweller of today has a place of residence in the city. It is equipped with all the mechanical "conveniences" that modern ingenuity, aided by "efficiency experts," have been able to create. Life, too, with him has become well nigh mechanical and such a thing as joyous spontaneity is rapidly becoming ancient history. Cliff dwelling is taking its place as our national pastime. But the love of home, the desire of home, and the spirit of home are neither dead, dying nor sleeping. These are restless, urging spirits that cry against imprisonment in artificial, cold-storage habitations.

The shut-in city house does not offer the fullest answer to the question of the homeseeker. However ornate, cozy or home-like, it can never be anything except a winter abiding place. Because of surrounding exterior conditions, not perhaps so much for its own physical limitations, it becomes cramped and crowded when the soft winds of spring are followed by the soothing breezes of summer. It is expressly true that "blue skies and mild winds, a few trees and scattered parks are not enough to keep busy city workers in wholesome touch with the mind-inspiring and body-healing 'great out of doors.' They need also the cheery message of bright flowers that come and go with the seasons, bowing and smiling reminders of the life that is more than the gain of riches."

The country home, on the other hand, most often only affords the city dweller an abiding place for the summer months. Life so ordered, however, is but transitory and approaches the ideal only when the several considerations of convenience, comfort, time and wealth are brought into proper relationship.

The most satisfactory solution of the problem of housing and living seems to lie in a form of residence, located in near proximity to the city, which will be a blending of all the roomy joys and comforts to be found in the country home, with the many necessary and practical conveniences of the town house; the wholesomeness of the country in close touch with all the advantages of the city.

The medium-sized cities of the country present the best and most advantageous conditions for the combination country and town house. In the

ENTRANCE DETAIL, HOUSE OF MRS. H. C. MOFFITT, PIEDMONT
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COURT, HOUSE OF MRS. H. C. MOFFITT, PIEDMONT
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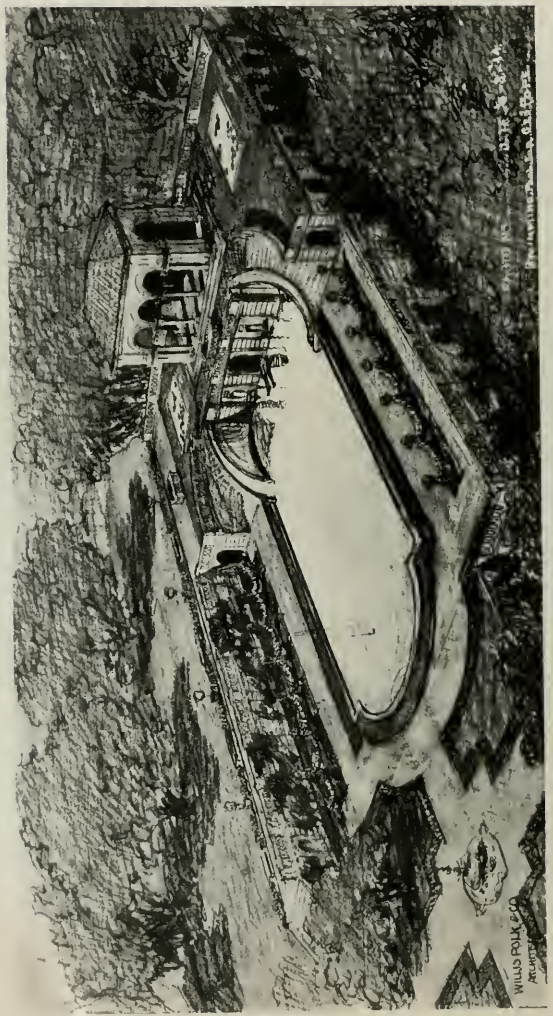

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STABLES, MR. J. B. CORYELL, SAN MATEO
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HOUSE OF MR. WILLIAM C. DUNCAN, SAN MATEO
CHARLES PETER WEEKS, ARCHITECT

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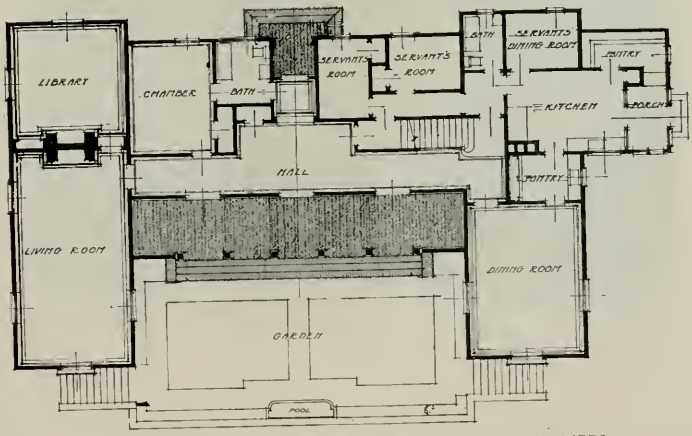
Charles Peter Weeks, Architect



FLOOR PLAN, HOUSE OF MR. WILLIAM C. DUNCAN, SAN MATEO
Charles Peter Weeks, Architect

COURT, HOUSE OF MRS. ANDREW WELCH, SAN FRANCISCO
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TOWER, HOUSE OF MR. CHARLES SHARP, LOS ANGELES
B. COOPER CORBETT, ARCHITECT

OPEN AIR THEATER, BAKERSFIELD, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

ENTRANCE, HOUSE OF MR. CHARLES AMILLO
B. COOPER CORBETT, ARCHITECT

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MACDONALD & MACDONALD, ARCHITECTS

BUNGALOW OF MR. JOHN W. EDMINSON, PASADENA, CALIFORNIA
B. Cooper Corbett, Architect

beautiful residential districts of Los Angeles, Oakland, San Jose, Berkeley and Pasadena there are many fine homes surrounded by spacious grounds—poems of joy—which serve as all-the-year residences.

In these cities and in smaller communities, there is no real necessity for houses to be crowded one against the other, as if seeking protection from the gaze of the world or to conceal some of the crimes committed in the name of "architecture." These residences, however palatial or however simple, should be real homes in spirit and not merely individual hotels; they should breathe of intimacy and personality, and the rooms themselves should express moods rather than mere decorative treatment.

There is a latitude in decoration and furnishings in the "half way" house, not possible in either the city or country home, and this combining of the best features of both, results in an individuality and charm which can be obtained in no other dwelling.

The combination country and city homes are easily within reach of the San Franciscan. Down the Peninsula into San Mateo and Santa Clara counties, over into Alameda and Marin counties are to be found some of the pleasantest hills and valleys and here have been developed for the last ten years beautiful communities that equal the many famous and charming garden cities of the Old World.

These communities and their homes of pure delight are not of the country exactly, because they have not the solitude of the true country, and the congestion of the city is happily lacking. Such are the places to build, to create a home suffused with the true and enduring spirit of home in its finest sense.

ELEVATION, HOUSE OF PR. W. C. CHIDESTER, SAN MATEO, CALIFORNIA
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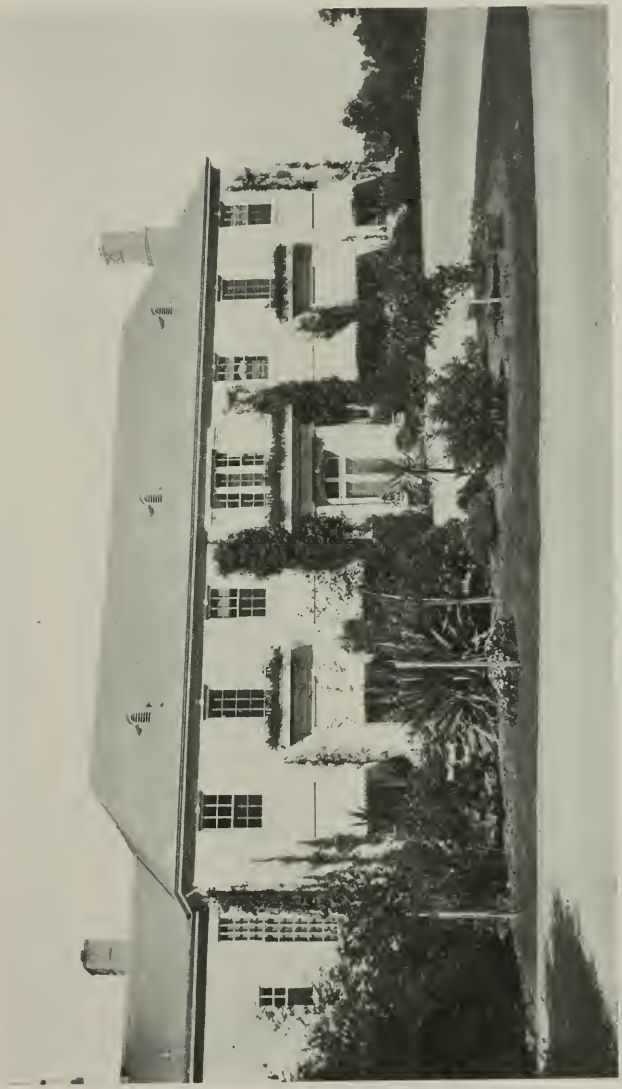

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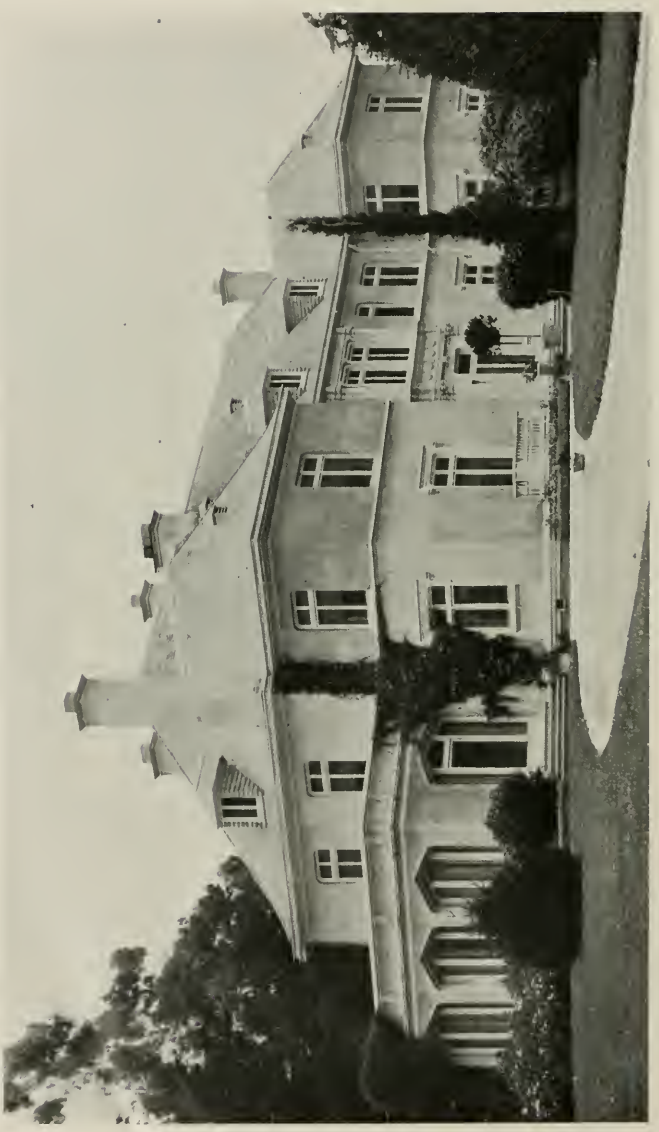

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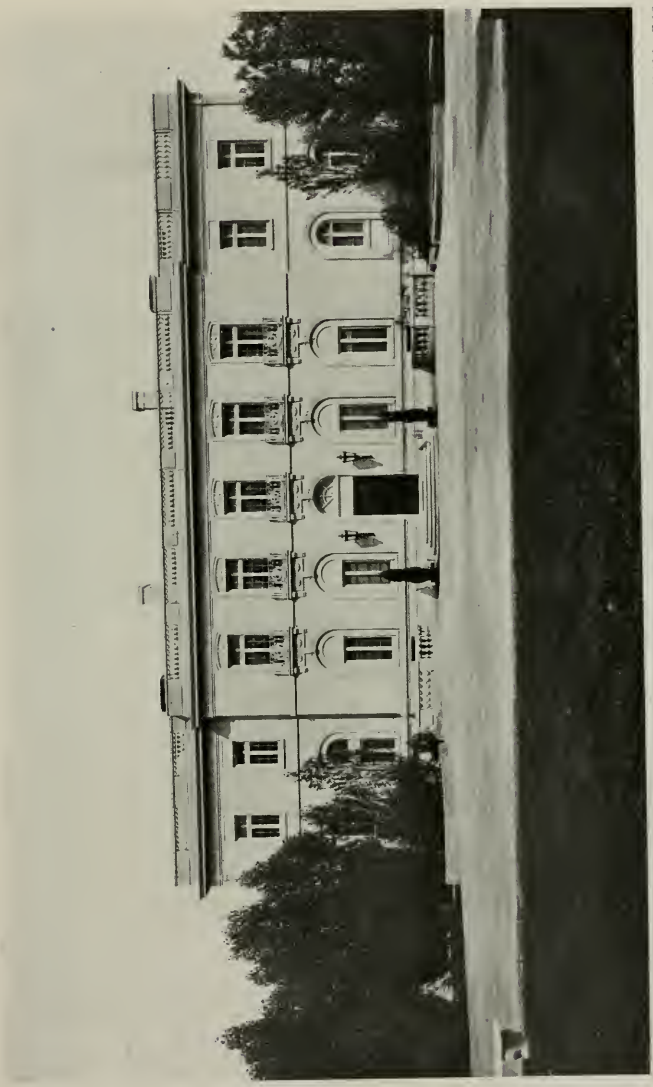

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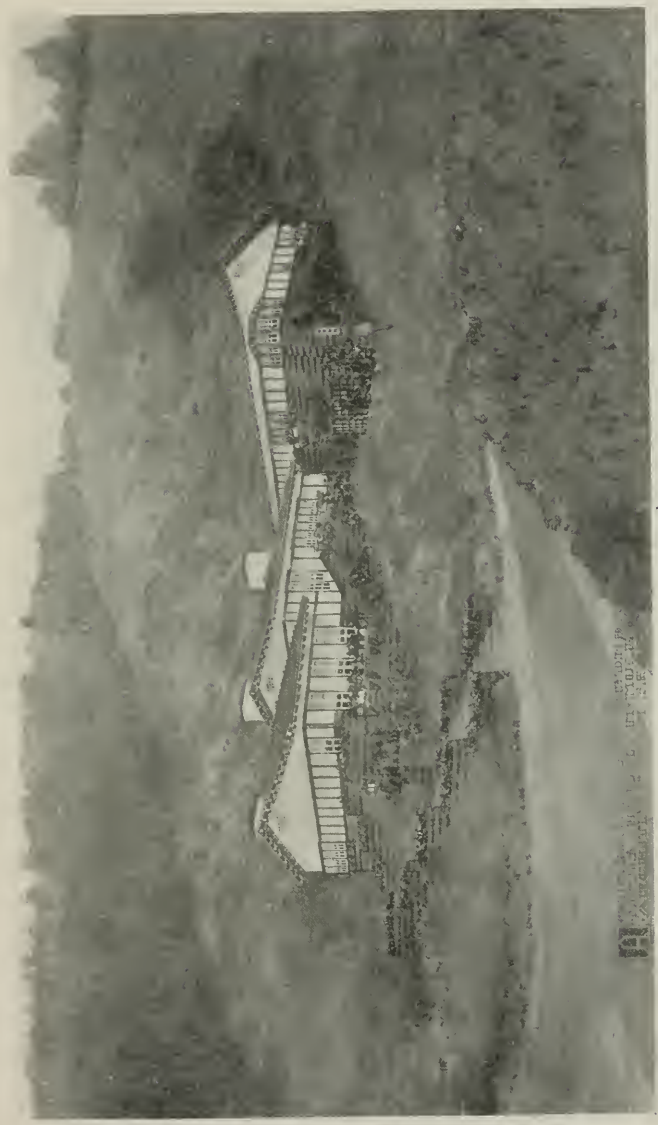


SUBURBAN HOME DESIGNED FOR PIEDMONT HILLS, CALIFORNIA
LOUIS CHRISTIAN MULLGARDT, ARCHITECT

HOME FOR MR. CHARLES W. FORE, PIEDMONT HILLS.
LOUIS C. MULLGARDT, ARCHITECT

Cement in Home Building

Its Use Considered from the Structural and the Aesthetic Points of View

By CHARLES E. WHITE, Jr., A. A. I. A.

CEMENT has not accomplished everything that was predicted for it, because when its adaptability to building was first recognized and when its manufacture was undertaken on such a scale as to make the cost reasonable, a veritable wave of foolish prophecies swept over the land. On the other hand, it has accomplished many things which were not even thought of at the time, and though it may be true that it has not reached the limit of its usefulness, it is better understood and its advantages are more generally recognized. This has been brought about by the test of actual use. The experimental stage was passed a very long time ago, it seems, though in truth it has been but a few years of actual time, for cement, as applied to home building, is still a new material, even though its utility has been proved beyond dispute, by actual, practical use.

When a great wave of cement enthusiasm swept over the country less than ten years ago, it was predicted by the very optimistic that it would displace every building material then in the market. Brick, stone and clay hollow tile, it was said, would give place to concrete, and it would be scandalous to make use of lumber for anything at all but door and window-frames.

It was to be the great panacea for all building evils. In short, it was predicted that cement was destined to become a building material, general, ideal, and that people would soon live in cement houses with cement floors, bathe in cement bowls and in cement tubs. They would climb cement stairs to a cement roof dressed with flowers growing in cement tubs, and enjoy all the delights of a cement roof garden.

In all fairness it is only right to say that the cement millennium has not come to pass in precisely this way. Other materials continue to be used and some are more adaptable to certain purposes than cement. No one building material dominates another. Lumber, stone, brick and hollow tile are used and rightly used when used rightly.

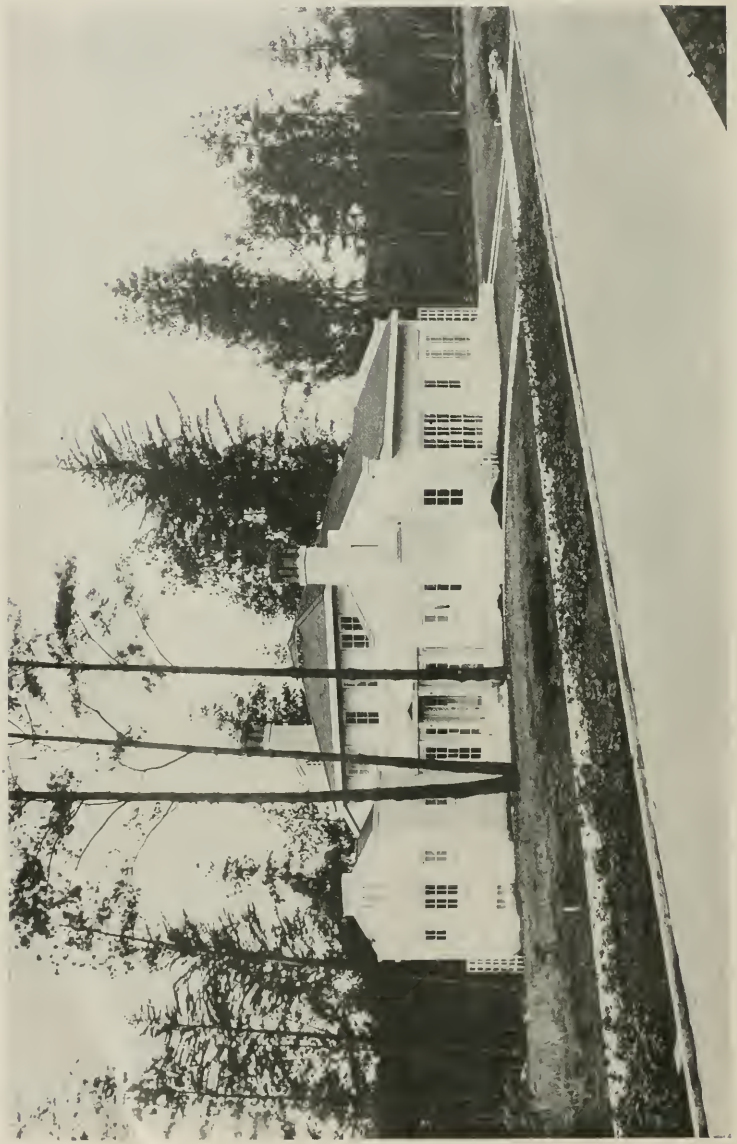
All materials of the first magnitude depend, more or less upon cement for their highest efficiency in building work. Clay bricks are more serviceable with cement to bind them together. Terra-cotta hollow tile has been made more desirable for house construction by applying cement plaster to the exterior. Stone is seldom used in modern building without cement mortar, and houses built of lumber have been made next best to masonry construction by cement plastering the outside.

Plaster in place of clap-boarded and shingled exteriors has done much to increase the use of cement in house construction. It is easily and quickly applied, durable and pleasing in appearance.

A well-built house of lumber is a first-class building to live in and to own. With every part of it of the highest grade, and the workmanship of the best,

HOUSE OF MRS. HEARD, SAN FRANCISCO
LOUIS C. MULLGARDT, ARCHITECT

HOUSE OF MR. L. J. DAVIS, ST. FRANCIS WOOD
HENRY H. CUTTERSON, ARCHITECT



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HOUSE OF MR. A. O. SMITH, ST. FRANCIS WOOD
Albert Farr, Architect

HOUSE AT ST. FRANCIS WOOD
Henry H. Gutterson, Architect

RESIDENCE APARTMENTS FOR MR. NORMAN P. LIVERMORE, SAN FRANCISCO
Charles W. McCall, Architect

HOUSE FOR MR. NORMAN P. LIVERMORE, SAN FRANCISCO

SOUTHEAST VIEW, W. B. WELLMAN RESIDENCE, LOS ALTOS
Henry C. Smith, Architect

GARAGE COURT, W. B. WELLMAN RESIDENCE, LOS ALTOS
Henry C. Smith, Architect

HOUSE OF DR. GUIDO CAGLIERI, SAN FRANCISCO
ALBERT FARR, ARCHITECT

ENTRANCE COURT, HOUSE OF DR. CAGLIERI, SAN FRANCISCO
ALBERT FARR, ARCHITECT

HOME OF MR. FREDERICK M. GIBBS, SAN BENITO WAY, ST. FRANCIS WOOD
HENRY H. GUTTERSON, ARCHITECT

a house of lumber is a fairly sound, enduring investment. Kept painted and repaired, it will last for years. However, conditions make it harder every year to build enduringly of lumber. Lumber prices are high and lumber quality is low. Labor cost, insurance, cost of painting and repairs tend to discourage house owners from building frame houses and they seek more substantial construction.

Cement plaster exteriors, however, have helped to improve the frame house; no clapboards or shingles to paint every third year; warmer houses in winter and cooler houses in summer, and pleasing architectural appearance, when properly designed, making better-looking towns and villages. These are some of the advantages of cement construction; less ornate, unnecessary details about the building, more simplicity and good sense in design and construction. With such factors in American domestic architecture largely brought about by increased facilities for manufacturing Portland cement and a quickened taste for improved design, is it any wonder houses have improved?

Cement-plastered exteriors may be of rough cast, rough sand finish or smooth, trowelled finish, depending upon the characteristics of the design and the desire of the owner. Smooth, trowelled finish is more durable when broken up into comparatively small areas, and it adds greatly to the appearance of the design to use woodwork in connection with cement plaster to add a touch of color. Smooth cement plaster is somewhat monotonous in appearance unless it is enlivened in this way with color. Such plaster is trowelled smooth with a steel plastering trowel.

For rough sand finish, sand somewhat coarser than ordinary is in the final coat. When it has partially hardened, a wooden trowel, or float, is used, slightly tearing the surface of the cement to give it a rougher, more granular appearance than smooth plaster.

Roughcast is composed of coarse gravel or crushed stone for the final coat, thrown with force against the under-coat, causing it to adhere. Cement roughcast is the most durable exterior material that can be put on a frame house unless it be brick veneer. Bits of gravel or crushed stone used in roughcast harden in the cement used until the surface is like stone itself, a tough, impervious material of durability.

Cement plaster may be applied on hollow tile, metal lathing or on wood laths. All are serviceable when properly used. Each is valueless when wrongly used. Metal lathing should be thick, and the metal should be heavily hot-galvanized or it will rust out in a few years and cause the plaster to drop off. Wood laths must be one inch wide—not one and one-half inches like inside laths—well seasoned and free from weakening knot holes. Joints between laths should be wider than is customary for inside plastering in order to allow a large proportion of the cement plaster to ooze through and to form wide keys. It is this plaster flowing around the laths that grips and binds it to the building.

Tinting of exterior plaster is obtained with difficulty. Staining or painting the exterior should be resorted to only upon advice of a competent expert, and the same applies to color mixed with the mortar. Using inferior compounds or applying even standard coloring material in an inexpert way will cause trouble later on when wind and weather have had a chance at it. Many cement exteriors have no color at all than the natural line of the cement.

Green blinds and roof are excellent to add color to a cement house. Although very pleasing without blinds, the exterior of such a house is made richer in effect by this simple expedient. Cement plaster is also used in a practical way in connection with ivory-white woodwork and green blinds.

GARDEN, HOUSE OF R. M. TOBIN, ESQ., HILLSBOROUGH, CALIFORNIA
LEWIS P. HOBART, ARCHITECT

The Architectural Beauty of Well-Designed Lattice Work

Niche, Court of K. P. Hooker House, San Francisco—Willis Polk & Co., Architects

LATTICE possesses an imaginative, gay and lightsome quality. It has also the arresting charm of a poster, the delicate effect of fine lace, or of a giant cobweb spun across a path. It looks as though its inventor might have caught inspiration from the shadow of interlaced branches of a tree upon a lawn. No garden feature, not even a flashing fountain, can rival its romantic beauty when, in the form of an arch, it spans a walk or a seat and supports a rose that has climbed up and across it by winding in and out of its airy meshes, lifting festoons of blossoms at every turn, dropping color and fragrance through every opening.

The queen of flowers never seems more absolute sovereign of the garden than when enthroned upon a lattice arch, never seems a more bewitchingly loving enchantress than when wreathed about a lattice bower, coyly venturing, coquetting, appearing and disappearing through the white barred frame. Wisteria transforms it into a ladder of green, trailing clouds of lavender and purple glory as she mounts it rung by rung up to the second and to the third stories of a home, honeysuckle upon a square meshed lattice fence is at her best, clematis upon a lattice screen is in her element, the grape never pours more abundantly of its purple wine than when given an arbor to rest upon.

Gardens are never quite complete without an arch, fence, screen or bower of lattice. It would seem unnecessary to say such articles should be made in the simplest way, were it not for the fact that we see its informal nature bent and twisted most horribly into recessed arches topped by recurved scrolls in the most ridiculously elaborate way. Lattice is in its very nature an informal and simple thing, and all its grace and pretty lightsomeness is destroyed when an attempt is made to make it a showy feature of a formal garden. Park architects and real estate promoters are prone to build great structures, fearfully and wonderfully made, of lattice in square, oblong, diamond, octagonal meshes, so fine that not a vine could thrust a tendril through. These structures were not meant to be "ruined" by vines, but to be a background for plaster statues. Invention could formulate no more wretched a background for garden statuary than an elaborately constructed lattice over which no vines are climbing. Such things are devised for city beer gardens, when an illusion of country grounds is desired, and sun and smoke bar out the possibility of living green. But lattice alone will not suggest a garden. Their companion vines must be in evidence to complete their reason for existence.

GARDEN ELEVATION, HOUSE OF R. M. TOBIN, ESQ., HILLSBOROUGH, CALIFORNIA
LEWIS P. HOBART,
ARCHITECT

COURT, SHOWING EFFECTIVE LATTICE TREATMENT, HOUSE OF JOHN GALEN HOWARD, BERKELEY

A lattice is pre-eminently a garden device, says a writer in Craftsman, so if a natural excusable way be found to use it as an integral part of a house design, it connects house and garden in a most perfect way. When made flat in a large square mesh and built into the house directly over a window, horizontally or paneling a door, the vines will soon find it out and claim it as their own. They know just what to do with it, just how to cover some of it out of sight and how to leave other parts of it visible;

TRELLIS BREAKFAST ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
Messrs. Howard & White, Architects

they cling to it with firm grip, then release delicate tendrils to swing airily and cast lovely shadows against the house.

The unimaginative, practical man decides against summer houses covered with vines because, he growls complainingly, "they get musty." Such grumblings are laughed at by lovers of garden beauty. They, wisely enthusiastic, care naught for possible mustiness; they think instead of the fragrance released to the world at large when roses and honeysuckles bloom.

There is no reason why lattice arbors and summer houses, when made of white pine with galvanized nails and occasionally painted, should not outlast several generations of builders. We have records of white pine garden trellises still in good condition that have supported roses for a hundred years and more. All through New England abandoned farmhouses are to be found falling to sad decay through ruinous neglect; yet the lattice arch over the gate, or the trellis screen by the porch, or the airy summer house will still remain, mutely testifying to the taste and loving care of the home makers of long ago.

Lattice always seems artificial and out of place within doors. No matter how cleverly the effect of out of doors is simulated in inner courts, it nevertheless shows that it is an imitation of something—a poor counterfeit that deceives no one. The place of lattice is essentially out of doors, associated with vines, green lawns and moonlight, not with enclosed corridors, artificial flowers, electric lights and plush carpets. White, or white and green, or pale gray have been the favorite colors for painting, though occasionally, such is the modern craze for color, they are painted in the gayest of yellows, scarlets or black.

POOL AND PERGOLA, HOUSE OF W. C. DUNCAN, ESQ., SAN MATEO
Charles Peter Weeks, Architect

Pergolas

THE growing desire to live in the open has caused a wonderful change in the matter of construction details, and the genius of designer and builder has been put to a marked test in order to meet the demands of the times. The porch, long ago looked upon with reverence, has been developed from year to year, and the changes made possible in this way have been the underlying factor in causing lawns and the entire surrounding landscape of a home to undergo a different aspect.

One of these changes has been a revival of the time-honored pergola. The term revival is used from the fact that the pergola is not a new style of outdoor decoration, but a feature of lawn architecture that was common in Greece and Rome centuries ago. It is but a revival of an ideal form of increasing the beauty of the home grounds, and making the home a much more attractive habitation. The pergola has its place in exterior decoration, and it has its meaning, and its details should be given at least a fair consideration by every man who builds.

There is sufficient reason for this when the matter is looked into with any amount of care. The primary consideration for the man who wishes to erect a pergola on his lawn is to have a careful study made of the grounds. This is generally placed in the hands of a landscape architect, but more frequently in the hands of an architect. The location of the pergola depends upon the cost, the size, the material and the labor.

Much of the pergola work is constructed with wood columns, girders and rafters. The kinds of stock vary with the climate, and what will prove

GARDEN AND PERGOLA, HOUSE OF MR. CHAS. SHARP, LOS ANGELES
B. Cooper Corbett, Architect

PERGOLA, HOUSE OF MR. C. WESLEY ROBERTS, LOS ANGELES
B. Cooper Corbett, Architect

of value in one section will not always give satisfaction in another locality. The most generally used woods are white pine, cypress, white cedar, red cedar, yellow poplar and fir. To make the columns perfectly durable the timber is thoroughly air dried before being manufactured into the pergola materials. There are two styles of columns in use today. The solid, nearly always bored out in the center for several inches, and the stave or built-up column. The latter, after many tests, has proven to be the most satisfactory, as the constant contact with the elements causes checking and cracking where there has been a disregard for care in the manufacture of the work.

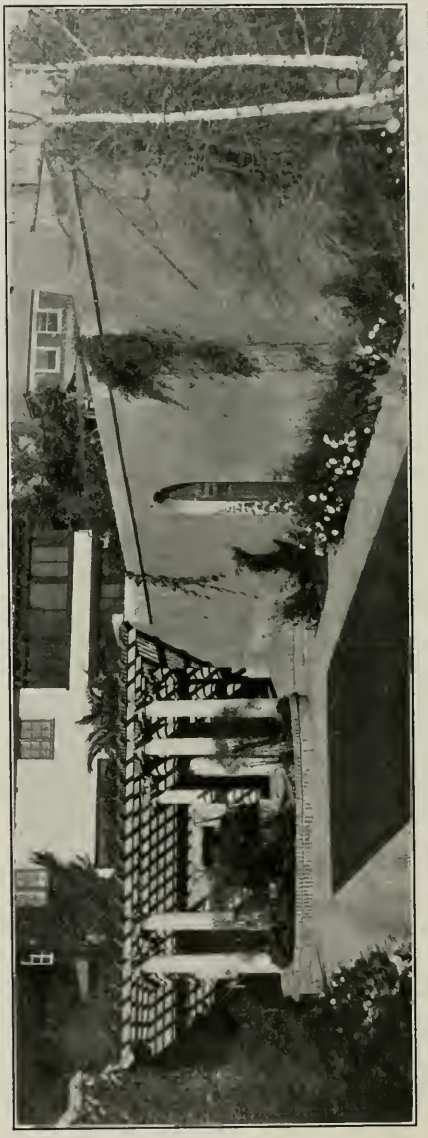
In boring out the columns from the solid log there is sure to be left some of the sap wood and this, when it dries out, will cause damage to the columns. The built-up column obviates this danger, and likewise makes the column much more durable. So it will be well to make sure of the kind of column that is placed in pergola work in order to obviate the danger of damage. There is another advantage that the built-up column has that is well to keep in mind. In placing the columns in position for the pergola the better plan is to first erect a post, at least 3 feet in the ground, and permitting about 18 inches to remain above the surface, over and to which the columns can be placed and fastened, making the latter very secure in time of storm or wind. The posts are of cedar, chestnut or locust.

The most popular columns for pergola work are the Doric and Ionic, either plain or fluted. The square and octagon styles are not so generally used for this class of work as the round columns owing to the fact that the latter seem to fit in with the general scheme of decoration more artistically.

Where the columns are to be used for exterior work they are treated in advance by the manufacturers. The erection of the pergola is a simple matter if there has been care in the first place in securing the proper dimension stuff. The width of the columns and the location of them is a matter for individual taste. It might be well to bear in mind the following rule, so that the style of columns used will be correct as to height: The Greek-Doric column should be seven times the bottom of the shaft, the Tuscan eight, and the Roman-Doric nine times. The diameter at the neck should be one-sixth less than the bottom diameter. The measurement for the height is taken from the bottom of the base to the top of the capital. The caps used for pergola work are generally plain, though it is not a rule to be followed. Then the manufacturer should be informed what the columns are for so that in the case of pergola work the capitals are furnished with solid abacii, this is to prevent the weather doing damage, as will be the case where the mitered abacus is used.

While there are other materials used for pergola work, such as concrete, stone, brick and terra cotta, the larger number are constructed of wood.

The idea of the pergola is to afford a shelter from the sun and to act as a garden nook or other retreat. These shelters sometimes lead directly from the porch to the garden, the garage or the indoor garden. They are built along different lines and they are a feature of the home, not alone the mansion in the country, but also the more modern abode in the city and suburbs. They are found in the small city and in the towns. They are increasing in popularity for the reason that there is a growing desire to live in the open. They serve as a retreat and they deserve justly the popularity that is now being accorded them.



PERGOLA, UHL ESTATE
ALBERT FARR, ARCHITECT

HOME OF MR. L. P. STELLER, SAN BENITO WAY, ST. FRANCIS WOOD
FRANK FARENKOPF, DESIGNER

LIBRARY, HOUSE OF MRS. H. C. MOFFITT
WILLIS POLK & COMPANY, ARCHITECTS

AN ATTRACTIVE PORCH LIVING ROOM
B. Cooper Corbett, Architect

The Inside of the House

By HARRIET T. RICHARDSON in The House Beautiful.

THE porch living-room marks the growth of an idea. For years we dreaded the heat of summer and feared drafts and night air—porch living-rooms were non-existent. Northern people built houses for winter use and apparently took no notice of summer heat, while Southerners built verandas and furnished them with rocking chairs. The idea that health and the best means for recreation and rest could be found in a formally developed out-of-doors room, which should also be a part of the house, had not occurred. Since, however, it has been established that open-air life is both tonic and restful, all varieties of interesting developments are in progress; none as yet fully applied, but each suggesting new methods for carrying forward the idea.

The problem of the porch living-room is to translate this idea of rest and leisurely pleasure into terms of fine architectural design, weather-proof furniture and sun-proof, woven materials; a problem far more simple from a human point of view than that of planning an inside living-room because the one great principle of the room is relaxation. Rest demands privacy and quiet. For these reasons, when the new house is planned, the porch living-room is shielded from public view, from the clouds of circling dust which enclose the honk of the automobile, and from the kitchen windows. Even in America, those who willingly take their rest under watchful eyes are few.

ENTRANCE HALL AND STAIRWAY, HOUSE OF DR. CAGLIERI, SAN FRANCISCO
ALBERT FARR, ARCHITECT

DINING ROOM, RESIDENCE OF DR. CAGLIERI, SAN FRANCISCO
ALBERT FARR, ARCHITECT

HALL AND STAIRCASE, HOUSE OF MR. S. LOWENSTEIN, SAN FRANCISCO
G. Albert Lansburgh, Architect

Privacy, then, is the first requisite of the fresh-air living-room and one possible to achieve even where houses crowd together. The room is also given the finest glimpse of sea or mountain peak, and if these are not available, the garden, however small, may contribute its color and fragrance to the other sources of enjoyment. To these delights of the eye, may be added the cool sound of running water from the garden fountain, or from the wall fountain placed in the porch itself, and—if prevailing winds permit—an open hearth may bring the possibility of campfire suppers into the suburban night.

The physical conditions of the porch living-room are unique. It is a space with one or more walls only, subject to the glare of untempered light, open to wind and sun and rain, and, in certain localities, to marauding mosquitoes. The architect understands that such space has to be closely related to the exterior of the house, that it must become an unobtrusive part of whatever style of architecture the householder has chosen. Where the site of the house is unshaded, a deep overhang must be dropped from the ceiling to within five to six feet above a railing which rises solidly from the floor and which is crowned with flower-boxes; a treatment also necessary where the room fronts the street and where the flower-boxes

INTERIOR, RESIDENCE OF MR. S. LOWENSTEIN, SAN FRANCISCO
G. Albert Lansburgh, Architect

ADAM DINING ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
Messrs. Howard & White, Architects

BLUE AND CREAM GUEST ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON
Messrs. Howard & White, Architects

LIVING ROOM, RESIDENCE OF GEO. A. NEWHALL, ESQ.
Lewis P. Hobart, Architect

are the house garden. Flower boxes are gardens in miniature, and portable besides; that one may dig in them without going down on her knees makes gardening a pastime for summer afternoons. When, however, the porch living-room becomes the link between the house and garden, the design frequently is given the effect of a summerhouse and rises by low treads from the garden paths, or remains upon the level of the flower-beds.

The architect realizes that the feeling of rest is only to be gained through simplicity; he understands that line motions make or destroy rest; that strong, quiet lines should frame the distant view, and that trellised walls make the room a part of the garden. The treatment differs with the conception of the room, and is entirely governed by the site of the house and its architecture.

The day has arrived when the porch living-room has ceased to be a deck-like piazza with its one wall covered with the dusty clapboards of the house, its railings a mass of zigzag lines, and furnished forlornly with varnished rockers and faded green table-covers; it is neither a narrow balcony thrust out beside the front door, nor a conservatory, nor a sun parlor. It has the dignity of a living-room. It is becoming a means of better living for human beings, and is materializing through an idea. That a large sum of money is necessary to create the room is untrue; the choice of material is so wide that the room is more dependent upon personal understanding than upon the household pocketbook.

The compliance with three interesting rules make the furnishings of a porch living-room a success. These rules deal with the laws of color, with the structure of the human body, and with the action of the elements on dyestuffs and manufactured articles. Colors should be chosen which, if they fade, will change harmoniously as old tapestries have changed; furniture should support the body in restful positions; and both stuffs and furniture should be weatherproof.

In a room in a house, the human being is the chief attraction; in the porch living-room, men and women must share their attractiveness with the view, and in consequence the colors of the materials should frame the living picture, the warm countryside or the sea line. Only where the room is enclosed in deep woods, or entirely surrounded by neighboring houses, should chintzes, pillow coverings and rugs show large patterns of vivid color; "the lesser the area the more intense the color" is as true of the outdoor room as of an interior. In the mountain regions, there is a deep blue to be seen among the shadows on the green hillsides which is beautifully effective when caught and placed in the room that faces distant peaks, and with this blue a clear note of soft cool yellow can be hinted here and there. If sand dunes surround the house, a delightful harmony of colors is made from sage greens and gray-brown shades that call for a flash of orange and against which the ocean becomes more blue.

Whether we are conscious or not, the eye takes in all that it sees and grows tired when we are unaware; how tired it may become we never dream when glaring stripes of awning dart across the sky and the entire prism of colors at full intensity is turned loose in swirling lines within a few feet of one another!

The shops are filled with woven materials, both expensive and inexpensive, which are wonderfully soft in color and which wear well. Silk and velvet are out of place and are never missed among the chintzes, the cretonnes, the printed linens and the heavier cotton weaves.

Rush rugs run from four to twenty dollars, according to size, either square or oval in shape, and are good for open floor spaces. Navajo rugs,

LIVING ROOM MANTEL, HOUSE OF DR. CAGLIERI, SAN FRANCISCO
Albert Farr, Architect

woven in the black-and-white wool, give a motif for a unique treatment of the room. The range of soft colors in rugs shown by a prominent house is exquisitely lovely and would help develop any scheme which the householder might choose.

The newer rooms have abandoned the wooden flooring, and are using the cooler tile and treating the walls in harmony; and electricity is being employed more and more. Where this is introduced, the base plug should not be forgotten, so that the electric fittings on the tea-wagon may be conveniently used. Whoever has experimented with the electric kettle and the toaster on a summer afternoon for tea realizes that a puff of wind is no longer to be feared. Standard lamps combined with a book rack or a table are also made possible through the use of the base plug, and, from the ceiling, hanging lamps give the indirect light in wicker shapes harmonious with any furniture. Through the use of sliding screens, the porch living-room can be open by day and closed in against insects at night.

As to the chairs and tables, they are useless if they invite rest but do not give it. The tropics have given largely to the porch living-room. China sends low Canton couches and seats, with a choice in price of twenty to forty dollars. The Philippines send the peacock chairs that add a distinction to any room by their beautiful lines and their accompanying tabourets. India sends her swinging seats, the idea of which can be inexpensively carried out by means of a camp-bed swung from ropes or chains and given a rustic wood frame. Japan sends cotton rugs and her adaptable idea of the use of running screens.

Reasons Why a Municipality Needs a City Planning Department*

By HENRY F. WITHEY, Architect, Los Angeles.

WITH regard to the problem of city planning, there has been so much said, there has been so much written, and the subject is so large that at first it seems difficult to determine from what point to approach it. But considering you visitors who honor us with your presence, you who serve us as officials in several of the important city and county governmental departments—it seems fitting that the subject be treated with regard to our own city, sincerely hoping that the discussion of ideas—for which purpose we have come together—will bear fruit by this gathering, not to gratify any personal ambitions other than the one—to do that which betters humanity in general and which improves our condition locally as applied to our homes and our city, and that there will come that increase of happiness that is to be found in the cultivation of taste and the opportunity for its enjoyment.

Los Angeles—"The City of the Angels," we are pleased to interpret it. Considering its significance I pause to wonder why so many of us had the audacity to come within its folds.

Were it built after the visions of the biblical prophets, marble palaces would be ours in fields elysian, traversed with streets of gold. The Franciscan Fathers surely possessed high ideals and aspirations in so christening the small pueblo set down upon the desert sands—with no greater claim to such a title than the balmy climate and vistas of the lofty mountains.

Not attempting to apologize for our presence, let us stop to consider if we are making our city worthy of an intelligent people and of what we so loudly boast.

It is not my intention, though, to lead you on any visionary flight to heavenly air castles, but to deal with concrete facts in keeping with the commercial age in which we live. However, progress toward a better day for cities owes more than to be guessed to the impetus of dreams and hope and high resolve. These furnish the inspiration to practical achievement.

In the beginning this city had in its plaza what might have been the nucleus of a city plan. The conception was good even though adopted in 1781 by such humble founders as the Spanish Fathers and colonists. The pueblo plan of colonization common to Spanish-American countries had its origin far back in the middle ages. In early European colonization the pueblo plan, the common square in the center of the town, the house lots grouped about it, the arable lands and pastures beyond appears in the Aryan village, in the ancient German work and in the old Roman praesidium. The Puritans adopted this form in their first settlements in New England. Around the public square or common where stood the meeting house and town hall they laid off their lots, and beyond these were their cultivated fields and common pasture lands. This form of colonization was a combination of commercial interests and individual ownership. Primarily it was adopted for protection against the hostile aborigines of the country, and secondly for social advantages. This was the initial point from which the settlement radiated. A conception for growth and expansion, considering who the original inhabitants of Los Angeles were, was not to be expected.

*Address delivered before the meeting of the Southern California Chapter, A. I. A., June 13, 1916, and revised by the author for this magazine. Present at the meeting were officials of the Los Angeles City and County Government, who were especially invited as guests of the Chapter.

So today in its unguided growth we find the city spread over a great area like a fungus growth on the map, with no heart or arteries of consistent character.

We claim many beautiful homes; as individuals we may be considered to have done well, but collectively—no! The city has grown on lines determined partly by accident and mostly by the push of enterprising real estate holders, not according to any plan of efficient orderliness or art. The ugliness and the inadequacy of our surroundings are not due to viciousness of character or commercialness as so many would have it, but to plain ignorance, a chaotic condition of thought which has set up a false standard of values. Our battle, and it is a battle which must be waged—is not so much against a definite or established order of things as it is against chaos, chaos is our problem.

Is it not possible to survey this growth and attempt to bring order out of it, and outline a comprehensive tentative plan as a guide for future growth? I presume the task of preparing a comprehensive plan for Los Angeles has appeared too stupendous because of the city's large growth. We have appreciated the need at times but lacked the initiative and continuity of purpose and efforts.

In an effort for civic improvement the first step is to make a comprehensive plan, a program, a written and draughted expression of our thoughts and ideas for the future, that we may guide ourselves as we travel along. This is almost the only step that can insure the highest type of modern civic art, since requirements are greater now than when artists and master-builders dressing with beauty the narrow streets of Italian and Flemish cities created the civic art of five centuries ago. In those cities urban hygiene and circulation made no demands on civic art. Now days these things are fundamental, and unless there be a well-thought-out artistically conceived general plan to work on, our civic art will go astray with lack of completeness or continuity. So it will fail because isolated and spasmodic; because it will mean a fine park, some patriotic statuary, a few good streets and several good buildings rather than a city dignified, orderly and beautiful as a whole.

Now a comprehensive city plan is nothing more than a program of procedure. Technically it is the art or science of planning the development of a city in a systematic and orderly way.

As individuals you never think of doing a number of things without a first thought-out program. You live and exist by the fundamental laws and program of the Almighty God. Transgression means premature decay and death. You sleep, you spend the waking hours of the day, you dress, you eat, you shop, you build your house by an outlined program, and in the conduct of your business you follow a program—written or mental, and depending upon the thoroughness and wisdom of that program is your financial success.

Now collectively, what? Is there not a greater necessity and responsibility to your fellow associates? The various corporations of the country are founded upon a program of procedure, and depending upon the efficiency of their programs do they flourish or fail. Efficiency is the cry of the day, and it marks the difference progressively between the village blacksmith and the great steel corporations, the ox cart and the transcontinental railroads.

Now here we are a corporation, 600,000 strong, with a good political organization—with a corps of able executive officers and servants, but where are we going? Our progress reminds me of a sight I saw out here

on the way to Hollywood one morning recently. A round, red-faced, bewhiskered midget of a fellow came driving out from a side lane on to the boulevard in a rattling, dilapidated Ford. Instead of driving west on the nicely paved right-hand side, he crossed over to the left and went banging along over the uncovered ties of the inbound railroad track. On the hood of the machine was displayed a sign reading, "From somewhere to anywhere." And he surely was on his way as he tumbled along. And it caused me to reflect that that is about typical of Los Angeles' constructive policy.

There is no large or united program of progressive construction. Our constructive policy, if we have one at all, is unguided, and it allows a wide scope for the poor taste of untrained individualism. We are drifting along to the goal of lost opportunities. And as the city continues to grow larger and the resources increase, the public works become more spectacular and permanent, so that mistakes in these last a long time, and are striking examples of folly. The need of artistic guidance, both in public and private work, is more keenly felt, the extravagance and wastefulness of duplicated effort are realized; the value of an authoritive aesthetic control is perceived, and it is appreciated that to make any true advance in civic art there is needed something more than means and impulse. Civic art is as ancient as all the arts, but it is distinguished from the others by its contentment to be servant, not mistress in the glorifying of cities. In spite of certain enlightenment the impression still prevails that art is an effeminate luxury, a token of decadent aristocracy, a veneer costly and unnecessary. We are still prone to pride ourselves over-much on being plain citizens, mistaking crudity for simplicity, and ignorance for logic. What is any art but the right, best way of doing a certain thing? The art which is so utilitarian in its purpose as to be civic first and art afterwards may be defined then as taking in just the right way of those steps necessary or proper for the comfort of its citizens—as the doing of the necessary or proper thing in the right way.

So civic art is not a fad, it is not merely a bit of aestheticism. There is nothing effeminate and sentimental about it; it is vigorous, virile and sane. Altruism is its impulse, but it is older than any altruism of the hour—as old as the dreams and aspirations of man.

Cities are not made to be looked at but to be lived in, and if in the decoration of them there be any forgetfulness of that, no successful civic art will follow and the effort will defeat itself.

The council, which on first thought might be considered the directors of the city's growth, is only an executive body. The various departments into whose duties enter construction of any kind, for the most part, carry out that construction generally as public needs most urgently demand. Those demands, by interested citizens, are made through the council and as our executive body, they are so ordered.

Each improvement is generally made without consideration of any other department or features that may have a bearing upon the subject.

The old saying, "Too many cooks spoil the broth," is very applicable to our present conditions.

Every now and then an idea of improvement or of a new building is advanced. Some of these are carried through as was the Southern Pacific station more recently. That matter of a new City Hall has been brought up three different times, I believe, if not more. At another time the issue may be voted. Should it be so and we have no studied, comprehensive

plan, you can well imagine what will happen. Have we not a sufficient number of errors in this city at the present time to be no flattery to our taste or intelligence?

Eight years ago or thereabout, there was made a very good beginning toward preparing a city plan, but mind you, those were suggestions only, made hastily in a few days. The seed was planted, but like the orphan of the slums, it has been neglected and has not had a healthy growth. May be it is just as well for today we are able to profit more greatly by the experience of other cities and examples that have been set before us. With a larger and broader vision we can approach the problem now.

We have the city of Washington before us. Shall we be blind to that example? And here in our own state there are the examples of the San Francisco and San Diego expositions. What would these fairs have amounted to if each group of persons, having a building to erect, had placed them wherever their fancy pleased without regard to position, height or style of the others? Are we so stupid and ignorant as not to recognize the orderliness and simplicity of their plans? Is not the city of Los Angeles more important than any temporary exposition?

Is not the idea of a comprehensive plan one of plain, common sense, of concrete efficiency? Is there anything very unreasonable in the idea, too visionary or impracticable? Is it not a sound business proposition that we should give immediate attention to?

Now what are our needs and possible requirements for the next few years? Are they not a city hall, a library, a state building, county buildings, hospitals, railroad stations, transcontinental and local, subways with surface stations, schools, fire stations, convention halls, with clubs and hotels of semi-public character?

To the buildings which would go to constitute the architectural elements of an administrative center there ought to be given not merely a central location which will be invited by consideration of convenience even more strongly than those of sentiment, but all the additional emphasis and conspicuousness that site can offer.

No other structures are so appropriately entitled to the best position that the city can afford, convenience and appearance being jointly considered as those that officially stand for the city. And not only do these structures belong together, but each gains and is enhanced from proximity of the other.

They make for better efficiency, orderliness and economy, and aesthetically are more impressive.

And is it not essential and time that we looked to the front doors of our city? Are they any better than back doors at the present time?

Since it is said that the tourist trade is a large factor in the financial success of our city, wouldn't it be good, common-sense and business sagacity to make them orderly, clean and attractive?

A comprehensive city plan will include many features of the city's work but these mentioned seem to be sufficient of importance to call for definite action.

Here is our opportunity, the right, common-sense, business-like thing to do—to create, revise and adopt a tentative, comprehensive plan for the physical development of the city, making it a correlation of the plans for streets, parks, playgrounds, transit, railroad terminals, grouping of public buildings, markets, etc., that will be needed and built as time goes on. Let us have a comprehensive plan that will get us somewhere, instead

of following a haphazard policy or rather no policy at all. The plan once secured, public spirit and artistic sense of the community can hardly fail to insist that it be adhered to.

The pride that enables a man to proclaim himself a citizen of no mean city awakens in his heart high desires that before had been dormant.

The study and preparation of a comprehensive plan will be for the benefit of all of us, therefore it is a task to be borne by all of us, the city. To accomplish it there must be a commission or department formed as a unit of the city government. Provisions for the establishment of such are already made by the city and state laws.

Such a commission, which should be composed of architects, engineers, and those technically trained, with broadest ideas and conceptions, will have to serve without pay, but services of a secretary, possibly expert advice and of a number of draughtsmen will have to be cared for. But it is constructive work, means for economy and is vitally essential to our needs.

At the present time the City Planning Association and the City Planning Committees of the Municipal League, the City Club, the Architects and Engineers Society and this Chapter are combining their efforts toward securing the formation of this department as a unit of the city's government. Various phases of the subject are requiring much study but rapid progress is being made, and we hope that substantial results will be obtained if the idea is thought proper, wise and needed.

Allow me in closing to read you these lines from a magazine of recent issue; the thought is appropriate:

I LIVE HERE

By Strickland Gillilan

A garden, a perfect mosaic, deep green 'gainst the blackest of loam,
Spread out near a little log cabin—but immaculate home!
I paused to admire—who could help it?—the weedless expanse near the door,
Where, pleased with my pleasured inspection, stood a "mammy" of years that are yore.

"A beautiful garden," I ventured. She cupped a brown hand to her ear.
"Fine garden!" I shouted. "Oh, sholy! It ought to be fine—I live here!"
I went on my way with a sermon as great as I ever had heard.
The highest paid preacher existent could never have added a word.

Were every human who cumbers the tiniest spot of the earth
To see that the place he inhabits—the work brain or fingers give birth—
Stood perfect as e'er he could make it—dear God! what a different sphere!
Let's borrow our motto from "Mammy": "It ought to be fine—I live here!"

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It Would Be a Big Apple

To test the intelligence of a witness in a contractor's suit, said the Washington Star, a judge questioning him regarding the definition of a cubic yard, said to him: "Witness, look at this apple on my desk. Now, assume this apple to be three feet across the top, three feet through the middle here and three feet up and down—what would you call it?"

"Well, judge, your honor," said the witness, "I'd call it some apple."

Protecting The Owner and Architect

ANSWERING an article in the Contract Record of April 19th, written by G. Alexander Wright, a San Francisco architect, entitled "Bids Bidders, and Bidding," Sidney W. Band, assistant manager of the United States Fidelity and Guaranty Co., writes as follows:

As I feel that a word from the standpoint of the Bonding Company might be apropos, I take this opportunity of replying to the invitation extended by Mr. Wright.

Summing up Mr. Wright's article, as I see it, a responsible contractor, and by responsible contractor I mean a contractor who is competent and capable of handling any contract he tenders for, "inasmuch as his figures will be carefully compiled and allowances made for a fair profit on the contract," hesitates to bid because he is competing with irresponsible contractors who are inexperienced and who therefore do not figure as carefully or as conscientiously, their main idea being to secure the contract with the hope that they may be able to complete the contract profitably. To be explicit: they have everything to gain and nothing to lose for the price they submit.

The question therefore resolves itself into how can the owner and architect protect themselves against the tendering of irresponsible contractors without experience and without sufficient financial standing to back up their tender.

The answer is simple. You have at your disposal a quick remedy, by inserting in your specifications the following clause—

> The Contractor shall furnish with his tender the consent in writing of a guaranty company authorized to do business in Canada, to issue a contract bond on his behalf, guaranteeing the faithful performance of the contract in an amount equal to 20 per cent. of the amount of the contract, and contractors proposing to tender will make immediate arrangements with their guaranty company for such bond, as the companies require sufficient time to complete inquiries.

This will compel every contractor tendering on the work, obtaining a bond from some guaranty company, who is prepared to back up his tender by their financial resources, guaranteeing that if the contract is awarded to him he will sign the contract and that he will carry out the contract according to the terms and conditions, plans, specifications of the contract. If this plan is adopted you eliminate the inexperienced, irresponsible contractor, without any financial backing, from tendering on the work and get down to the only class of contractor which the owner and architect want to deal with. There are a sufficient number of responsible contractors to still leave the question of price on a competitive basis and this arrangement places no hardship on any contractor who can do the work. He simply arranges with his bonding company for a bond the same way he would arrange with his banker for a line of credit. It relieves the architect and owner of the work of ascertaining whether they are letting the contract to a financially responsible contractor or not, and also whether he is competent in the line of work on which he is tendering, and it does not legislate against the smaller contractor because any contractor, be he big or little, who is responsible and bears a good reputation, can secure credit from a guaranty company up to the amount which they consider he has had the experience and financial responsibility that they can safely back him up for.

In conclusion, let me add that the first protection to the owner and architect is the manner in which the guaranty company carefully considers every contractor's application. Every application is dealt with separately and entirely on its own merits. The moral, as well as the financial standing of the contractor, is taken into consideration along with his ability in the line of work to be undertaken, and it is only after every point is carefully considered that the bond is either accepted or refused.

I wish to thank you for the opportunity afforded me of putting these suggestions to you and hope that they will be considered worthy of publication and trust that you will consider that this article is written entirely from an educational standpoint.

[This suggestion of Mr. Band is deserving of consideration, we think. If every bidder was compelled to submit a bond with his bid, many of the "fly by night guessers" would soon have to give way to the more competent and careful bidders. Owners would be better pleased, architects would suffer less annoyance, the building industry could get better prices, better work and a better understanding all-round would result.—Ed.]

Are Architects Too Conservative?*

Why are architects, as a class, indifferent to improved devices? Any salesman calling on architects will confirm the statement that, collectively, architects do not readily accept new methods and materials.

Doubtless a very proper conservatism toward untried materials is prompted by the desire to protect clients from unsatisfactory results, but is it not equally desirable to give them the comforts and economies made available by careful investigation backed by technically trained judgment?

It is common to find a passive attitude on the part of the architect even toward proved commodities and in numerous instances the client actually has to "sell" his architect materials with which the architect has not become familiar. The architect should use his technical training not only to protect his client from unworthy materials but to aid him in selecting the best that can be obtained.—Concrete.

By FREDERICK JENNINGS

THE above article raises a question of more than ordinary interest. Manufacturers, dealers, salesmen, and agents who handle building trade requisites should be vitally interested. Wishing to obtain some viewpoint other than our own, we have conferred with an architect of mature experience, not only in regard to this particular question, but touching also the relations of the architect with the drummer, canvasser, or whatever the correct title of the representative or salesman may happen to be. As one result of this conference our viewpoint, which has always leaned if anything in favor of the salesmen's methods, has undergone somewhat of a change, and we are now inclined to believe that architects can, if they will, throw the spotlight of enquiry upon his activities with advantage. Architects may have something to say on these subjects and we shall be glad to have their views.

"Are architects too conservative?" Possibly architects *are* conservative, and they need to be, for it was never so hard to keep gold bricks from being forced into the construction of buildings as it is today, at, of course, the expense of the "client." The already overworked "bogey" *safety first* is partly responsible for some of this. The experienced architect, the one who has something to lose, usually prefers to be sure first, rather than sorry afterwards. These perhaps might be termed the conservative ones, but are they to be condemned when they are spending a client's money? Many of these men, however, notwithstanding their conservatism, are apt to listen, and to be over-considerate to the ever-increasing army of building material salesmen who, to speak plainly, seem to delight in pestering the life out of the busy architect, morning, noon and night, in season and out of season, at his office, his club, on the street corners, in the Builders' Exchanges, anywhere, everywhere. Yea, even his home circle and telephone has no sacredness with some of these unsolicited solicitors. Are architects really too conservative?

If manufacturers and dealers could be made to see how much business they lose every year through their representatives antagonizing architects with their unwise persistence, some expense accounts would soon be eliminated from the firms' overheads. And, what a relief to the architects' offices!

A better theme for profitable discussion might be "Are salesmen too persistent?" If they are, the remedy is obvious. The architect might steal some of the salesman's commonest thunder, and offer to show the manufacturer or dealer himself how he could "save money" by keeping his salesman at home until he was sent for. Then his call would be welcomed, and there would be a good "prospect" created, which is not always the case now. One of these gentlemen was heard to say recently, "I call upon every architect in this city at least once a week"! but immediately afterwards upon being asked if he was doing much business he said, "No! I am not doing anything." Is this not an object lesson? Is the game worth the candle?

*Further discussion of this subject is invited from the salesman's viewpoint.—Ed.

Experienced architects are not devoid of some intelligence or even common sense concerning materials they may wish to use in certain situations, or their application, and they usually know where and how to get them. This is something it takes salesmen a long time to learn. Architects have, and prefer, their own way of getting posted about new or meritorious materials and methods, and are not dependent upon salesmen for this information. Busy architects also subscribe to the architectural and building magazines as much, the writer believes, to keep in touch with such matters, as for any other reason. Sometimes it happens that an architect knows about a certain thing or process before even the local dealer gets the agency for it. We know of architects who studiously read the advertising pages of the best architectural magazines of the country, and they acquire a respect and interest in these silent salesmen that they can scarcely ever extend to the noisy kind who are ever ready to gamble with figures, or to promise anything (the "moon" if necessary) so long as they get their material specified, and the house afterwards gets a chance to soak the unfortunate contractor whom they are apt to think is now compelled to use their product.

Some salesmen act as though an architect has nothing else to do but to await their coming with the glad hand. Then there is the aggressive individual who sees the client first, and not appreciating the fact that he was "let down easy," appears before the architect with a cocksure air, and the statement that Mr. So and So (the client) had *sent him* to explain his line of goods, and so on *ad finitum*. This gentleman is well known among architects, he is everywhere, but whether such tactics get business for his "house," that is doubtful! And there are other types, who queer themselves quickly by betting and guaranteeing (verbally) all they have (much or little) in support of their particular article, or all of them—it is just as easy for them. So much, then, for the "art" or the "science" of twentieth century salesmanship. And then comes the catalogue salesman! The one who repeats his little well-learned story like a parrot, but if in the middle of it he is asked a practical question by the architect about his material or its application, he is usually floored, but will obligingly "take it up with his house." This is a common incident. But why are such men sent unsolicited to architects? Are the latter considered so easy? One would not be surprised to learn that the above great and momentous question, "Are architects too conservative?" originated with one of these over-zealous knights of the road.

But some one will say, "These men must live!" Very true. So must architects, and to do so, the latter must work. The former enjoy a certain unalienable right, of course, to pursue happiness, but not architects!—who in self-defense often have to be foxy and hide, when very busy, whilst the agile salesman is perhaps holding down a claim in the waiting lobby outside. Some salesmen may be surprised to learn that some architects, sometimes, have ideas of their own, and that it takes time, and study, to work them out.

Unfortunately, there are hundreds of untried new materials and things turned out every year which are expected to take the place of standard goods, but they never do; they are simply good talking propositions and they fade away and disappear, but, like the weeds on a farm, there is always another crop coming, and here, lest we forget, it might not be inappropriate to ask again "Are architects too conservative?"

It is a fact, as before suggested, that progressive and ever-conservative architects are apt to entirely pass over the house whose representative has made himself a nuisance, and they will turn to a more conservative and equally good dealer, or what is even more likely still, to the advertising pages of their favorite architectural magazine to find what they want.

After all, why *should* the salesman continue to pay their uninvited visits to the architects' offices? If the practice was discouraged and discontinued, there would be just as much building material used, and just as many sales made. Let the architect hunt the dealer and manufacturer for once. Put the shoe on the other foot, save overhead expenses and give the client closer prices or better service after the order is booked; there is certainly room for the latter. The salesman of course has his place. If competent to add something to the architect's stock of information, so much the better; he will be all the more welcome at the office *when wanted*. But where *is* the sense in an army of drummers persistently and continually trying to interview architects with hundreds of things they probably could not use in a lifetime? How much better all around for the architect to have to occasionally look up some special thing he may need, in place of being bombarded with so many things (hundreds of things) which he probably will never have the opportunity of using.

Salesmanship as usually taught and practised has no place in dealing with experienced architects. These men frequently already have had occasion to look into the merits of the very goods offered, and may have actually used them. They know as much anyway of the potential possibilities, and adaptability of a material as the gentleman who, may be, has just taken the agency for it, but who, if he fails to land an order, is apt to conclude, and improperly so, that "Architects are too conservative," but for which thousands of clients have good reason to be thankful.

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Coloring Concrete

To color concrete properly it is not advisable to use paints or stains. Best results are obtained from the use of a pure mineral cement color that is free from clay, gypsum and organic matter.

A well informed contractor offers the following formula for coloring cement. He says:

"The colors will not fade if the directions are closely followed. These recipes were given me some years ago, and I find, that wherever tried, they have proved to be all that was expected of them. The quantities are given per barrel of cement, the coloring matter in each instance being mixed dry with the cement and sand. Caution is given that venetian red and common lampblack should not be used, as the color obtained with these materials will run and fade. The various colors and quantities of coloring materials for each barrel of cement are as follows:

For brown, 25 lbs. of best roasted iron oxide; or 15 lbs. to 20 lbs. of brown ochre.

For black, 45 lbs. of manganese dioxide.

For blue, 19 lbs. of ultramarine.

For buff, 15 lbs. of ochre. (This is likely to considerably reduce the strength of the mixture.)

For green, 23 lbs. of greenish-blue ultramarine.

For gray, 2 lbs. of boneblack.

For red, 22 lbs. of raw iron oxide.

For bright red, 22 lbs. of Pompeiian or bright vermilion.

In using coloring matter with concrete, the color should always be mixed with the cement dry, before any sand or water is added. The mixing should be thorough.

Criticism of Proposed Terminal for Bridge Over San Francisco Bay

By FREDERICK J. AMWEG, C. E., Mem. Am. Soc. C. E.

I NOTE in the June issue of your magazine a very interesting article relative to the proposed bridge to span San Francisco Bay, which is being promoted by Mr. Harlan D. Miller.

Mr. Miller's scheme, I note, is to locate the San Francisco terminal for the subway at Third and Market streets.

Recently a suggestion was made that the terminal should be located at the new Civic Center in preference to Third and Market streets.

Quoting in part Mr. Miller's answer to this suggestion, he states: "I would like to call attention to the fact that in a project of this kind we are aiming to provide better transportation facilities for a traffic which already exists and are not trying to develop a new traffic. The aim is to save time and effort and add to the convenience of the traveling public by increasing the ease and facility with which business can be done. To do this we must put our cars where they are wanted. That means that our lines must go to the heart of the business, shopping and theater districts. If we do that we have greatly improved present conditions, for at present seventy-five thousand people are landed every day at the Ferry building, every one of whom has a long distance to travel to get to his destination. To land the people at the new Civic Center would not accomplish the object for which we are working. It should be noted that the proposed subway will extend around several blocks and that there will be many entrances."

I desire to call Mr. Miller's attention to his first statement that they are not trying to "develop a new traffic," but aiming to provide better transportation facilities for the "existing traffic." By providing better transportation facilities they will do just exactly what he contends they are not trying to do—that is, developing "new traffic."

It is a conceded fact that where time is saved for the traveling public, coupled with convenience and proper accommodations, that such an enterprise will always attract more traffic. This being the case, it is very apparent that it will be a great mistake to locate the terminal for the subway at Third and Market streets and discharge the bulk of this traffic, which will increase as time goes on, at this point. Third and Market streets is now very much congested and the facilities at this location admit of no further crowding, but, on the contrary, some means should be provided to relieve the present congestion instead of increasing it.

The Civic Center is the logical location for the terminal, and affords every opportunity for disposing of the traveling public with ease and comfort, and at the same time provides rapid service for those desiring to travel further west than Third and Market streets.

It must be admitted that of the many thousands of people that are landed at the Ferry every day, the destination of a large proportion of this number is west of Third and Market streets. The traffic to the Civic Center and intermediate points west of Third and Market streets is a factor that must be considered in any contemplated scheme for improving the transportation facilities from the Ferry.

It is, therefore, in my judgment, ill advised to terminate the subway at Third and Market streets, for all that is accomplished by so doing will be to remove the congestion at the Ferry and increase it at a point where, for the area considered, it is even worse now than at the Ferry, and will be greatly aggravated should the terminal be placed there.

Mr. Miller further states that the reason for placing the terminal at Third and Market streets is to save time and effort and put the cars where they are wanted, must go to the heart of the business, shopping and theater districts, etc. This is not a sound argument for the reason that the principal shopping district lies west of Third and Market streets; also the theaters and a large bulk of the business dsitrict. He also states there will be many entrances to the subway. These will afford the facility and opportunity for those who desire to land at Third and Market streets and east of that point, and, therefore, it is not necessary that the subway should terminate at Third and Market streets to accomplish this end, as he contends, but there is a good reason why it should continue to the Civic Center, namely: To enable those who desire to go farther west to do so, and not be compelled to transfer at Third and Market streets to some other means of conveyance or walk, and, as I have stated before, the traffic west of this point is now large and rapidly increasing.

Mr. Miller states in his article above quoted that seventy-five thousand people are landed every day at the Ferry, while in his article in the Oakland Tribune he states that the number is one hundred and thirty thousand daily, which further emphasizes my contention that the enormous traffic should not be discharged at Third and Market streets, but distributed along the line, and thereby relieve the congestion at Third and Market streets as well as at the Ferry.

Mr. Miller, in his article in the Oakland Tribune, contradicts his statement above quoted, in which he stated: "That we are aiming to provide better transportation facilities for the traffic which already exists and are not trying to develop a new traffic."

In the Oakland Tribune article he states: "It is an established fact that where better facilities for transportation are provided the traffic increases." That is my contention, as above stated, and if correct, it certainly is very bad judgment to build a structure that simply means the shifting of the congestion from one point to another where it would be even worse, instead of planning it for the increasing traffic, which he admits, and placing the terminal at a point where the traffic can be distributed over the greatest area.

* * *

Accuracy in Estimated Costs

Here is what James Riely Gordon, President of the New York Society of Architects, has to say on the subject of the indifference shown by many of the younger men in the craft to the question of accuracy in estimated costs:

"It is a lamentable fact that so little importance is attached to an architect's estimate of the cost of a proposed structure. The misrepresentations of irresponsible or ignorant architects is a deplorable condition and demands our rectification.

"An excessive cost of a building over and above the architect's estimate not only lowers the standard of that architect's reliability, but sometimes proves a serious embarrassment to a confiding client.

"The title of architect should imply not only a guarantee of both architectural ability and reliability, but the public has a right to expect and demand that every architect's estimate of the cost of any structure shall be sufficiently guaranteed to justify predicating financial arrangements thereon, without serious disappointment, and I trust that this society will, in the near future, demand that at least its members assume their full moral and financial responsibility in this respect to their clients."

The Home Makers

"I HAVE the queerest feeling," I said to Powell, "about this home building of ours. It doesn't seem as if it's really happening. We take up one thing after another in its logical order and it gives a sort of academic air to the whole shooting match. It's like learning to dance in a dancing school with lines painted on the floor. Now, I studied dancing faithfully for four years, but I never could dance with anybody except the dancing master, or with a chair in the privacy of my bed-room. I have a feeling that our house is too ideal, too formal and correct ever to become an actuality."

"You needn't worry," said Powell. "You'll make enough mistakes to show you're human. You have already diverged enough from my ideals to make your house essentially Lydian and Horacian. Take your site for instance. It's a perfectly good site, but I should never have picked it out. And the style of your house. It's a perfectly good style, but I should never have selected it if I were building for myself."

"Well, there's some comfort in that. It's always nice to go against the authorities. What's the next step in our house building?"

"We might consider the various building materials."

"There you go again. Just as soon as I think we are about to get something tangible, we get started in a theoretical discussion. I always took building materials for granted."

"Still," said Lydia, "we have a great many tangible things already. We have a lot at Putnam and a deed to it. We have the location of the house staked out—probably wrong—and we have a general idea of a Dutch colonial cottage."

"And I suppose," Powell added, "that you have absorbed more sound architectural principles than you realize. You probably think that you have blundered along, and that a great many things I have said are esoteric. But principles will shape together in your mind into some sort of system, and maybe years hence you will suddenly understand things you may not understand now, just as we don't understand rules in grammar we learned in school until years afterward. I know there are a great many grammatical rules I don't understand myself yet."

I was glad Powell attenuated this, for it sounded conceited. Even as it was, I felt a little provoked with him.

"You needn't think I don't know what building materials are," I said. "They are brick, stone, wood, and concrete."

"Wood," said Powell, "might be considered the original building material. We can imagine pioneers hewing out their houses from the primeval wilderness. We can imagine the raising bees. There's something comfortable and near the ground, cosy and companionable about a wooden house. It's near nature, and it's near human nature. A wooden house seems rooted in the soil, like the trees it was made from. Of course, I'm not referring to the modern store box style. There can be great variety in wooden houses. They can be constructed of siding of various kinds, shingles, clapboards, or matched boards presenting a smooth surface. We can paint our wooden houses any color we want, and if they are shingled all over, we can leave them unpainted, so that they get a silvery luster, especially when they are near the sea. There's something elastic about a wooden house. You can alter it easily, you can modify the original plan, which can grow to suit your needs and your changing ideals."

"Well," I sighed, "after that eloquent description, no one would ever think of using any other building material."

"Oh, I don't know," said Powell. "There's a solidity about brick houses. In colonial times all our good brick were brought from abroad as ballast. They were small, hand made, charming in texture. Some of the old brick were picturesquely pink in color, and all brick where the atmospheric conditions are at all favorable tend to assume an attractive neutral color under the patina of time. Modern brick come in wonderful colors and textures. And if you want to paint a brick house, you can get very successful effects. I have seen white brick houses that caught the sunlight and the shadows of neighboring trees exquisitely."

"We're not talking about a Japanese screen or an oil painting. We're talking about a house. If plain people like us stopped to consider the shadows trees cast on their houses, they'd never get anywhere."

"Both brick and wood and stone," said Powell, disregarding my interruption, "lend themselves very well to the Dutch colonial style of house you have selected. Everything else being equal, if you want a stone house, it's good to use a native or local stone."

"I can see that," I said. "Using a native stone is somewhat the same thing as observing the local tradition. Isn't it too bad that there isn't a marble quarry near our place?"

"Oh, that would never do! Marble should never be used except in a semi-public building, and then it has to be used just right."

"I suppose," I said, "that if we really wanted to be up to date, we'd use concrete."

I said that really to get a rise out of Powell, and I succeeded. A shadow flickered over his face.

"We have to acknowledge that concrete is the construction of the future. In some situations, it is the only thing that will serve, and some of my colleagues pretend to see even a great many possibilities for beauty in it. I grant that it can have color and texture, and of course it is durable, but when it comes to dwelling-houses, I can't help feeling that its use should practically be restricted to the mission or stucco style."

"The trouble with you," I said, "is that you have a New England conservatism which objects to any change. You are looking for tradition, and there are no traditions in concrete. The reason you approve of mission or stucco style is because it suggests plaster or adobe construction, which already has traditions. You like concrete in these circumstances because it copies something else. Now, speaking as a steel-hoop man, I don't see any reason why a person shouldn't build his house of concrete and take advantage of the freedom that the material gives him. A house of concrete can be of any shape; it gives free rein to the imagination; it's like carving a house out of chalk or cheese. If a man wants to have his house shaped like a jewel-box or a popcorn pavilion at Coney Island, let him have it, say I. Tradition will come hereafter."

"Jewel-boxes and popcorn pavilions are just what many suburban houses look like, and it's one of the tragedies of an architect's life to see such things so common. In all the arts it's an axiom that limitations, instead of being obstacles, are aids to expression. In concrete construction, there are no limitations. Concrete construction is somewhat similar to a state of society in which there would be liberty without law, or love without marriage."

"I see what you mean," I said. "A person can't splay all over the place. He couldn't do it even in the steel-hoop business."

"Well, I don't know," said Lydia. "I'm a great believer in absolute liberty. Something good will come out of concrete, in the end."

Lydia pipes up like that every once in a while. Sometimes I have suspicions that she is not really a conservative. With feminism and all that sort of thing going around, it sometimes seems as if women were really the radicals instead of us superior males. What in the world would happen if women actually took the lead?

"Do you want our house built of concrete?" I asked.

"Certainly not. I see our house of wood, shingled all over—nice, broad, old-fashioned shingles, if we can get them. Won't it be fun to see them become silvered with time?"

"If you can't wait," said Powell, "you can have them bleached a very nice color to begin with."

I felt that we had got a good many things settled in this talk, and yet I was terribly impatient.

"This house building seems an awfully long-drawn-out process," I said to Lydia after Powell had gone. "Isn't it too bad that our wishes can't be fulfilled as soon as we think of them? I'm just wild to see our house rise like Aladdin's palace."

Lydia came over and rubbed my collar bone with her knuckles, a playful way of soothing me she has at times.

"Let's try to enjoy every step of our house building while we are taking it. That's the only way to enjoy anything. We must remember that people don't create a homestead every day."—House Beautiful.

* * *

Architect Plans Apartment House on Unique Basis

CHARLES PAFF, a San Francisco architect, is promoting a unique enterprise which he declares will secure for the investor a most substantial investment and a home which will be notable for its studied architectural completeness and modernity. The project includes such popular and healthful recreative accommodations as tennis, bowling and salt water swimming, in a class "A" building, located at the southwest corner of Sutter and Mason streets, San Francisco.

The building will be erected under the management of a board of directors, elected by the stockholders, thus making the investor or stockholder as secure in his holdings, as in the best known investment.

By the purchase of a block of stock, which represents an apartment of the desired number of rooms, the purchaser becomes the actual owner of his apartment and may dispose of or sell his apartment by the assignment of the stock.

As an illustration of the advantage and economy in the ownership of an apartment in this corporation, costing $8,000, the yearly expense, including all lights, heat and water, taxes and insurance, will be $232, or $18.50 per month. Garage storage, the use of ball rooms and special attendants in the natatoriums would be paid for in addition, as desired by the residents. The direct administration of janitor, elevator and delivery service, as well as the mechanical department, will be in charge of the building superintendent, who will be answerable to, and appointed by the directors.

The following synopsis of the specifications briefly describes the character, construction and finish:

The building is so planned that every room in every apartment will receive the sun a portion of the day, the main area and the roof forming solariums which are wholly protected from the prevailing cold winds.

The building will be a steel frame construction, with reinforced concrete floors and walls, and fireproof. The Mason and Sutter street fronts faced with architec-

tural "mat-glazed" ivory white terra cotta. The balance of all exterior walls are white enameled cement finish.

The machinery or sub-basement will be 40x137 feet 6 inches and will contain the heating plant, the electric and pneumatic cleaning machinery and exhaust fans, with an entrance on Mason street.

The basement will be 100x137 feet 6 inches and will contain the men's and women's salt water natatoriums, steam, hot and massage rooms; dressing and shower rooms and a garage with entrance on Mason street.

The mezzanine basement will occupy the entire area of lot and contain the service delivery room, store rooms for each apartment, the living rooms for the male employees and the bowling alleys, with an entrance on Mason street.

The first to the tenth floors, inclusive, with the entrance on Sutter street, will be arranged in five-, six- and ten-room apartments with finish as desired by individual owners.

On the roof two billiard and two ball rooms will be provided, as well as two tennis courts and the roof gardens.

The elevator service will comprise two fast passenger elevators, and six full automatic service elevators.

The finish of the main vestibule and lobby will be in "Portola" Columbia and black and white Belgian marble, with "faience" tile floor and wainscot inserts, and ornamental plaster cornices and ceiling.

The corridor floors and the wainscot will be of "Magnalith," the same as for the floors and wainscot of the kitchens, pantries and service elevator lobbies.

All corridors and the main lobby will have Axminster runners and rugs and the walls and ceilings will be decoratively stenciled in oil paints.

The halls and the three main rooms of each apartment will have parquet floors. The hallways and all other rooms will have hard pine floors. The bath rooms will have encaustic tile floors and enameled tile wainscot.

The wood finish of hall and main rooms of each apartment will be in hardwood, all natural finished, with all the balance in selected pine, enameled white finish.

Each apartment will be provided with every known fixture of convenience, including wall beds.

All the partitions will be constructed of metal studs and plaster. The hall and the three main rooms of each apartment will have ornamental plaster cornices and decorated ceilings. All walls will be papered with decorative paper, and the plaster walls and ceilings of kitchens, bath rooms and pantries will be in enamel finish.

In the natatorium, the swimming tanks will be lined with white enameled vitreous brick and glazed terra cotta life rails, marble floors and wainscot. Marble walls and divisions will be used in the shower rooms, tile floors and wainscot in the massage and hot rooms, and tile floors, walls and ceilings in the steam rooms and the entries thereto. The plaster walls and ceilings in these departments will be in white enamel finish.

All the glazing throughout the building will be of clear and wire plate glass. The skylights will be glazed with rough wire glass and the large ceiling lights over swimming tanks with art glass.

* * *

Instrument for Testing Floors and Walls of Buildings

A device intended to be used in testing floors, walls and columns of buildings in order to determine their safety and carrying strength has just been designed by Assistant Superintendent of Buildings D. E. Hooker of Seattle, Wash. It is known as an "Extensometer," and is of such sensitiveness that it measures the movements of buildings to the ten-thousandth part of an inch. In explaining the use and purpose of the instrument Mr. Hooker points out that when a floor or column in a building is loaded a slight movement takes place requiring a most delicate instrument to detect the change. When a floor slab is loaded the under surface stretches and becomes longer while the upper surface compresses and becomes shorter. By measuring the amount of the change and taking into consideration the kind and quality of the material and the amount of the load, it is possible to figure out the safe carrying capacity of the building. In reinforced concrete structures particularly this is important because in them weaknesses of construction are not otherwise readily discernible.—Exchange.

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY
A. I. WHITNEY - - - *Manager*
FREDERICK W. JONES - - *Editor*

Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer.

BUSINESS OFFICE AND EDITORIAL ROOMS
617-619 Monadnock Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. XLVI. JULY, 1916 No. 1

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THE IDEAL HOME

The ideal home is from the nature of its title a thing unattainable; which can be only striven for, never completely realized.

Nor are the ideals of any two persons the same, and even one's own ideal is constantly shifting with his broadening desires and maturing concepts of perfection.

Even assuming a fixed state of mind commensurate with one's resources, one cannot build a completely satisfying house; certain features are of necessity not compatible with others and any house when finally completed presents the results of a series of compromises.

The average man puts into his home, that is treatment of the grounds, the house, besides the furniture, from a year and a half to two years' income, and as his income increases so as a rule do his requirements, and a house which seems to him as nearly as possible ideal when built, would before long be outgrown. "When I built my house," said a well-known architect, "I felt that I had gotten exactly what I wanted, and so for a few years it continued to be, but with a growing family it became inadequate, nor did what seemed to me ten years ago the complete realization of my desires in the matter of design, remain the final word."

EDUCATE THE OWNER

The San Francisco Chronicle June 25 printed an anonymously signed letter attacking the architect for alleged failure to design buildings in harmony with surrounding structures. The writer goes on to say:

> Please reinforce the local application of your editorial of today on "Disfiguring Washington." Your concluding statement that "San Francisco would add wonderfully to her attractiveness if she could persuade all architects to bear in mind the general harmony" hits the point exactly. If any architect ever studies the building next to the one he is to design, the results do not show it. Walk along the San Francisco streets and it is very clear that every architect who is set to design a building proceeds on the theory that it is to be the only structure on the block. Hence we have a hodge-podge of antagonistic architecture with every building fighting its neighbors in design, color, materials and height. Instead of harmony we have discord, and buildings that should be an ornament to the neighborhood give a pain to the eye of the beholder. Why not edu-

cate our architects to consider the surrounding buildings as physical facts, grossly inferior in design to their own creations, of course, but as one of the sad conditions to which they must adapt their own beautiful creations. If that were done our streets would have something of the beauty of harmony that gave the charm to the exposition. S. F.

San Francisco, June 22, 1916.

Such a sweeping assertion as "every architect" is unfair to those members of the architectural profession who are well known for their artistic views. More than once has a San Francisco architect sought and fought for an harmonious design for all buildings in a given neighborhood, with results more discouraging than otherwise from owners who seem to think if they have something different, something freakish, they stand a better chance of renting their property, regardless of how it harmonizes with the building next door. So, after all, it's the owner, not the architect, who needs educating.

THE LABOR UNIONS AGAIN

Once again San Francisco is being held back by the labor unions. This time it is the lumber handlers and longshoremen. For more than a month the lumber industry in San Francisco has been at a standstill. The dealers are holding out for an open shop and we wish they might win out, but if they do it will be only after a long, expensive fight. And meantime what would otherwise be good business conditions for the building industry are now as bad, if not worse, as prevailed immediately following the fire of 1906. The records prove this to be so. According to the County Recorder the totals of building contracts filed during the third week of June showed a decrease over the same period last year of 70 per cent. But ten contracts were recorded. Building permits showed a similar falling off. Contractors predict that if the strike continues through the summer the building industry will become little short of stagnant. And for this we shall have to thank the labor unions, for architects claim they had enough new work in prospect to have given us genuine prosperity for the balance of the year.

REMEMBER THE ARCHITECT

In a few cities the daily press, when describing or illustrating a new building, mentions the name of the architect. In many cities the name of the architect is completely ignored in a fulsome write-up of that kind. This purblindness of the newspapers, for it is quite evidently a matter of pure ignorance, was made the subject of a letter by A. H. Howland, Ridgway, Pa., to the New York Tribune, in which he said:

"For years I have been patiently waiting for the time when the public press will consider architecture enough of a profession to recognize its achievement as such. While the newspapers seem to be aware that a concert virtuoso need not necessarily be a piano salesman and that an artist does not always conduct a picture framing shop, they are apparently unable to realize that architects are concerned with buildings in any way at all. Most accounts of new buildings give due mention of the owner and the contractor and also the renting agency, if there is such. The architect is accorded little, if any, recognition.

"Of course, there are all grades of architects, particularly those who call themselves such, and here again the public fails to make any distinction, being in utter ignorance that architecture is a profession and not a trade. An architect ought to know how to lay bricks, but few masons could design the New York public library or the Woolworth building. Some architects are what Irvin Cobb calls "carpitects," but many are even graduate carpenters. Perhaps there are as many as 12,000 persons listed as architects in the United States. Of this number the profession itself would consider not more than 4,000 trained architects in the true sense of the word. There are few professions so manysided or so exacting; also, it may be added, so remunerative, in consideration of the services rendered and the results achieved.

"A building which attracts the many, or even the few, is without doubt the result of an architect's efforts. On the other hand, those many dreary miles of buildings, whose least fault is that they are utterly commonplace, offend good sense and good taste because the builders are either unwilling or unable to give the problem in hand the proper consideration.

"Almost any newspaper will serve to demonstrate how architecture is regarded by the press. Press tradition is con-

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tent to label the illustrations of the building with this caption, 'After a photograph,' though reproductions of paintings on the same page have the artist's name prominently coupled with them."

In San Francisco the daily papers are gradually awakening to the fact that if they expect the architect to loan them his perspective of a building, they must give him credit beneath the picture. If they neglect to do this, architects, and with good cause, should decline to furnish the publishers with renderings of new work. This plan has worked out very well. It is known that some architects have paid the newspapers money to show their work and give them credit, but this is a questionable policy and if not stopped will eventually lead to the entire omission of an architect's name from his building unless he sees fit to "come through with the coin."

Landmarks Club Revived

The Landmarks Club, which was organized a number of years ago for the preservation of the California Missions and historical relics, was revived at a convention held at Riverside recently. The meeting was attended by Messrs. A. B. Benton, Sumner P. Hunt, Albert C. Martin and S. Tilden Norton of Los Angeles. San Diego was represented by Robert Halley, Jr. Chas. F. Lummis is president.

The reorganization of the Club was effected on a State-wide basis and provisions made for the establishment of local cloisters for each Mission in the State. The Los Angeles branch will be designated as the San Fernando Cloister as the San Fernando Mission is now within the city boundary.

A commission was appointed to make a survey of all the Missions to obtain their historic plans and ascertain their present condition together with estimates of cost of preservation and restoration. The commission will be composed of A. B. Benton and Sumner P. Hunt, official architects of the club, assisted by Captain Chas. T. Leeds, U. S. A., retired; Samuel J. Storrow, and Ernest A. Coxhead, San Francisco member of the A. I. A. committee on Historic Landmarks.

The Club expects to undertake the restoration of the San Diego and San Fernando Missions at an early date.

Oakland Architects Form Partnership

There will be considerable interest in the announcement of a co-partnership between former City Architect Jno. J. Donovan of Oakland and C. W. Dickey, the latter one of the best-known architects in Alameda county. Both gentlemen stand well up in their profession and undoubtedly they will make a winning team.

Donovan designed the $1,000,000 Oakland Auditorium and many of the new school buildings in that city, while Dickey was the architect of the Capwell and Kahn department store buildings, the Oakland Bank of Savings building, and many other pretentious structures. Mr. Dickey was at one time associated with Walter D. Reed.

G. A. Lansburgh Busy

G. A. Lansburgh, architect of San Francisco, is preparing working drawings for a large Class C apartment house to be erected on the southeast corner of Leavenworth and Sutter streets, San Francisco, for Dr. Albert Abrams. Mr. Lansburgh is completing plans for a reinforced concrete medical clinic for Mt. Zion hospital. Preliminary sketches have been made by the same architect for a new Orpheum theatre at New Orleans to cost $300,000, and a branch library for the city of San Francisco.

Architects for Albany Schools

The City of Albany, which recently voted bonds amounting to $75,000 for school improvements, has, through its Board of School Trustees, selected Wm. H. Weeks, 75 Post street, San Francisco, to prepare plans for alterations and additions to the present school building, while John J. Donovan, Dalziel Building, Oakland, has been commissioned to prepare plans for a new building to be used as a combination grammar school and kindergarten. The Donovan Building will cost approximately $25,000, and will be one-story, frame construction, stucco exterior, and either tile or shingle roof. Besides the kindergarten, there will be four class rooms and an assembly hall. The work to be done by Mr. Weeks will consist of remodeling and adding to the present Albany School Building.

Concrete Power House

Frederick H. Meyer, the San Francisco architect, has completed plans and a contract has been let to Messrs. Lange & Bergstrom for the construction of a steel and concrete power house on Webster street, Alameda, for the Union Iron Works. The building will cost approximately $60,000. Mr. Meyer has also completed plans and a contract has been let to Messrs. Knowles and Matthewson for the construction of a one-story brick and stucco store and office building at San Rafael for the Pacific Gas & Electric Co.

May Build Two-Story Addition

Preliminary plans are being made by Washington Miller, architect, for a two-story Class "A" addition to the present three-story store and office building at Market and Fremont streets, San Francisco, for the Lachman Estate Company. The original plans for this structure call for an eight-story building and were prepared by Messrs. Cunningham & Politeo. There is some talk of the Western Union taking the two additional floors.

Cotton Mill.

T. M. Farrell, 430 Chamber of Commerce Building, Los Angeles, states that he is forming a company, to be known as the Los Angeles & Riverside Manufacturing Co., for the purpose of financing and erecting a large cotton mill in the San Gabriel Valley, about two miles east of San Gabriel. An option has been secured on a 37-acre site.

Market Building Will Cover Block

The Hunt Hatch Co., which operates a number of markets and produce stores in Oakland and Berkeley, has concluded a deal for the entire block bounded by 12th, Webster, 11th and Harrison streets, Oakland. Plans will be prepared at once for a one-story concrete building to be divided into stalls and separate stores and to be used exclusively for market purposes. Preliminary plans have been worked out by Messrs. C. W. McCall and John J. Donovan.

Sacramento Carnegie Library

Loring P. Rixford, Sharon building, San Francisco, has forwarded plans for the new $100,000 Carnegie Library for Sacramento to the Carnegie Institute in New York, and as soon as the drawings have been approved, bids will be called for. The Carnegie Corporation has assured the City of Sacramento that the donation will be forthcoming as soon as the city is able to guarantee a fixed expenditure of $13,000 a year for maintenance of the building.

Sacramento Hotel Changes

E. C. Hemmings of Sacramento has prepared plans for alterations and additions to the Land Hotel at 10th and K streets, Sacramento amounting to about $40,000. The main entrance will be enlarged. It will be of marble panels, with brass and copper doors. The lobby will be finished in ivory and gold with tile floor. The walls will be paneled in mahogany. This scheme will also be followed in the dining room. Two new elevators will be installed.

New County Buildings

Henry H. Meyers, formerly of Meyers & Ward, architects of San Francisco, has completed plans for additions and alterations to the Alameda County Hall of Records which, when completed, will cost close to $130,000. Mr. Meyers is now at work on drawings for an emergency hospital and garage for the same county, also a tubercular hospital, the latter to be erected near Livermore.

Porterville Schools

Directors of the Rosedale school district west of Lindsay and F. W. Griffin, architect, have awarded the contract for the erection of a new school building for $4500. Plans have also been drawn by Architect Griffin for a new school house at Dennison.

Country House

A splendid country house for Ettore Avenali has been designed by Messrs. Bakewell and Brown, the San Francisco architects.

Competition for a Municipal Flag

The School of Architecture of the University of Texas is conducting a competition for a Municipal Flag for the city of Austin. The competition is open to anyone desiring to compete. Following are some of the more essential features of the program:

The designs shall represent the entire flag in definite color scheme, and shall be drawn upon a sheet of 8x10 inch white paper. The designs may be rendered in any desired medium. There shall be no distinguishing marks of any kind on the design which might identify the author.

Designs shall be submitted on or before October 2, 1916, to A. P. Wooldridge, Mayor of Austin, Texas.

The designs will be judged by a committee of seven, appointed by the Mayor, and approved by the general committee.

A first prize of $50 and a second prize of $25 will be awarded to the successful competitors, whose designs will remain the property of the City of Austin.

Any other design will be returned, on request, to the author at his own expense.

The jury reserves the right to reject any or all designs submitted, and further reserves the right to make selections from one or both of the prize winning designs, provided neither one is wholly satisfactory.

Further information may be obtained by addressing Mr. F. E. Giesecke, chairman, University of Texas, Austin.

Features that may be expressed in the designs are the natural beauty of Austin, the lake and dam, the capital of the State, the dome of the Capitol, the seal of the city, an educational center, its industries, the sentiment of its past history, the derivation of the name—from Stephen F. Austin, an expression of the ideals of Stephen F. Austin in symbolic form, the use of the coat of arms of Stephen F. Austin.

New Residence for Cragmont

Messrs. Wood & Simpson, French Bank building, San Francisco, have prepared plans for an attractive English house to be erected at Cragmont for A. U. Pope. Construction will be frame, brick veneer and plaster. The house will cost in the neighborhood of $10,000.

Changes to Four-Story Building

Messrs. Ward & Blohme of San Francisco have prepared plans for extensive improvements to the Halsey building on California street. The work will include new entrance vestibule, elevator fronts, ornamental iron stairway, bronze work, marble and tile, etc.

Fresno Architects Busy

Messrs. Swartz & Swartz, architects of Fresno, report the following new work:

Selected as architects by the Board of Education, Visalia, to prepare the plans and superintend the construction of the three new school buildings to be erected under the bond issue of $105,000, recently voted.

Plans selected in competition by the building committee of the Visalia B. P. O. Elks for their new lodge building to cost $50,000, exclusive of furniture. This will be a three-story and basement building, Class C, pressed brick exterior and terra cotta trimmings.

Residence at Exeter for Mr. A. C. Dungan to cost $10,000.

Plans have been completed for a school building for the Bullard School District just north of Fresno to cost $14,000. This building is designed along practical lines with a view of meeting the problems of the rural school district. The plans were prepared in conjunction with the State Normal School at Fresno.

Plans have been prepared for a $12,000 brick business building for Messrs. Cross & Lilley, at Visalia.

More About Santa Fe Building

Plans for the electric wiring and illumination of the 12-story office building to be erected at Second and Market streets, San Francisco, have been completed by Chas. T. Phillips, consulting engineer, Pacific Building. A feature will be an illuminated sign on the top of the building for the Santa Fe Railroad, which has taken a lease of the first three floors. As previously announced, the entire construction work is to be done under segregated contracts. The superintendent of construction will be Mr. Collopy, formerly with the P. J. Walker Company.

Big Wholesale Building

Messrs. MacDonald & MacDonald, Holbrook Building, San Francisco, will probably prepare the plans for the big wholesale building which John A. Hooper, lumber dealer, intends to build on the west side of Battery street, between Pine and California streets, San Francisco. A building to cost upwards of $200,000 is planned.

Fine Home Planned

John N. Willys of the Willys-Overland Company, which has just bought the business of J. W. Leavitt & Co., has purchased a large tract of land in the country and will shortly build a splendid home.

May Have Twin Towers

Preliminary plans have been prepared by Architects Willis Polk & Co. for the extension of the Hobart Building to Sutter street, San Francisco. It is proposed to build a twin tower the same height and on duplicate architectural lines as the present Market street tower, the two to be joined by a twelve-story building. The addition would double the present capacity of the Hobart building, which is already a paying proposition, more than 85 per cent of the structure being rented. The addition would provide excellent office facilities and would give the structure an entrance on Sutter street the same as on Market street, a battery of three more elevators being installed for the Sutter street end. It is believed that the Hobart interests will decide on the matter of building within a short time.

Country House With Unique Features

Willis Polk & Co. of San Francisco are preparing plans for a handsome country house at Saratoga, Santa Clara County, for Charles D. Blaney, State Highway Commissioner. Many unique features will be embodied in the plans, including a Romeo and Juliet balcony, a moving picture theatre for the children and an observation tower. Construction probably will be largely of reinforced concrete. Upwards of $60,000 will be expended.

Country Club Houses

A. A. Cantin of San Francisco has prepared plans for an attractive club house to be built at Mill Valley for the Town and Country Club. It will cost $10,000. A building to cost about the same amount is being designed by Eugene Mathewson, Fresno architect, for the Country Club of that city.

$50,000 Residence

Louis M. Upton is preparing plans for a $50,000 house to be erected at Vallejo and Lyon streets, San Francisco, for J. J. Tynan. The Italian style will be followed, exterior to be brick and plaster with clay tile roof.

New Palo Alto School

Plans for the new Stanford District School House, to be erected on the Campus of Stanford University at an estimated cost of $23,000, have been completed by John J. Donovan, Dalziel Building, Oakland.

Hospital for Sacramento

Dr. John L. White of the White Hospital, Sacramento, will next fall erect a fireproof hospital with a capacity of 100 patients. The hospital will cost $200,000 and plans are now being prepared by R. A. Herold of Sacramento.

Woodland Court House

For the second time, the electors of Yolo county have voted in favor of bonding the county to the amount of $200,000 for a new Court House at Woodland. Wm. H. Weeks of San Francisco has plans for the new Court House practically completed and the Supervisors will undoubtedly call for bids at their next meeting. The new Court House is to be constructed of steel, concrete and stone, and will be two stories and basement.

Engineer Newman Resigns

The California State Department of Engineering has lost an efficient assistant engineer in Jerome K. Newman, who recently resigned his position to take a much-needed rest. Newman has virtually directed the work of rebuilding the San Francisco water front and he has given the city types of construction and architecture that are a credit to himself and fellow workers. Newman declares his resignation had nothing to do with politics.

Santa Fe Plans Important Work

The Atchison, Topeka & Santa Fe Railway will expend about $300,000 in the construction of new bridges this summer on the Los Angeles-San Diego line. Near San Juan Capistrano a steel bridge, consisting of two 90-foot girder spans with concrete piers and one concrete abutment will probably be constructed over Trabucco Creek, also 680 feet of trestle, and a pile and timber protection dyke, 650 feet long. Over the San Luis Rey river four 100-foot steel spans on concrete piers and abutments will be erected.

Sympathy for Frederick H. Green

The many friends of Mr. Frederick H. Green, secretary and treasurer of the Atlas Heating & Ventilating Co. of San Francisco, were pained to learn of the serious accident which befell his little five-year-old son, George, on June 27. The boy was playing with a sparkler, a form of fireworks supposed not to be dangerous. The lad's clothes caught fire and the little fellow was quite badly burned before the flames could be extinguished.

Will Design Two Schools

N. W. Sexton, architect, and N. G. Ellery, formerly State Engineer, have been commissioned to prepare plans for two new school houses for the city of Placerville, El Dorado county. One will cost about $30,000 and the other about $5,000. They will be constructed of Denison tile and stucco.

Greek Theatre in an Old Gravel Pit

Word has been received at the University of California that an open-air Greek theatre, inspired by the Greek theatre at Berkeley, is to be built at Ganesha Park, Pomona, Los Angeles County. An old gravel pit has furnished the opportunity for the site. The theatre will have a stage 120 feet long and 40 feet wide. Between the stage and the audience will be an "orchestra" five feet lower than the stage and measuring 50x40 feet in size, intended for use for bonfires or as an athletic arena.

Above will rise many tiers of seats, excavated into the decomposed granite and built in concrete. These tiers will be 32 inches wide and each tier will be six inches higher than the one below. The distance from the footlights to the last tier will be 150 feet.

Fink & Schindler Win Suit

H. H. Hart, millionaire of Claremont, will have to pay $2,000 interest on a disputed bill for finishing the interior of his mansion which was completed in 1911 from plans by C. W. Dickey, and which is now one of the show places of Berkeley, according to the decision of Superior Judge W. M. Conley, in a suit brought by the firm of Fink & Schindler of San Francisco.

Judge Conley awarded the plaintiff firm judgment for $7,232 in its suit to collect a balance on their books against Millionaire Hart. The firm was allowed judgment for $5,321 as a portion of the amount sued for while the balance represents interest on the amount.

San Francisco Emergency Hospital

John Reid, Jr., has completed plans for the new Emergency Hospital to be erected in the San Francisco Civic Center at a cost of $100,000. The building will be Class A and is designed to harmonize with the architecture of the other municipal buildings in the Civic Center.

Hospital Additions

Plans are being completed by Alfred I. Coffey for a substantial addition to the St. Francis Hospital at Bush and Hyde streets, San Francisco. For the present three stories will be built. Later on there will be two more floors added. About $75,000 will be expended.

French Residence

Plans have been prepared by Albert Farr, Foxcroft building, San Francisco, for a $10,000 house for Dr. Harry E. Alderson. It will be built on Green street near Broderick, and will be of the French type.

Praise for the Building Material Exhibit

(San Francisco Chronicle)

There has been established at the corner of O'Farrell and Stockton streets a permanent exhibit of building material and appliances which promises to be both interesting and useful.

Multitudes of people are concerned with building. While most has been said of the direct usefulness of this exhibit to architects and builders, after all those who are most concerned are those who will occupy the buildings when finished. And that means the entire population of the city.

Whoever occupies a dwelling desires that the interior be made not only convenient but attractive, and there is continuous effort among architects and owners to so build as to attract and retain tenants. Tenants, therefore, are as much interested as owners, at least in interior fittings—possibly more, because they expect to secure any extra comfort without extra expense to themselves. This exhibit will do much to raise the ideals of tenants.

Those who are building their own homes, or buying those made ready to inhabit, will wish to know how to get the most enjoyment for the least money, and ingenious people the country over are constantly at work devising new appliances, new materials or new treatment of old materials.

At present, the intending builder must visit a large number of establishments if he expects to build intelligently, and does not have the opportunity to comprae side by side competing means of accomplishing similar purposes. This permanent exhibit will change all that. The advantages to architects and contractors are obvious.

Whoever has paid attention to such exhibits at the exposition has seen a wonderful array of materials and appliances which he at once recognizes as desirable although he never heard of them before. It is believed that as a result of the exposition there will be great changes in building in this city.

All exhibitors of such material have been invited to transfer their exhibits to this permanent display, where they are sure of proper care and where they can be seen by those who have become interested in them. If it has paid these exhibitors to make a ten-months' display in competition with thousands of other interesting features, it will pay much better to make a permanent exhibit where only building materials will be on display and which is sure to be visited by multitudes who contemplate immediate purchase.

Watsonite Mastic Flooring Once More

Watsonite mastic flooring, which will be found giving good service in many California buildings, but which has not been on the market since the Watson Roof Company suspended operations several years ago, will again be a factor in San Francisco building operations, Hill-Hubbell & Company having taken over the patent rights to manufacture and sell the product. Hill-Hubbell & Company are well known as the California agents for American Bitumastic Enamel. They have offices in the Fife building, San Francisco, and have for a number of years enjoyed an extensive business in this line, particularly with the shipping interests. The firm is in a position to handle the Watsonite product effectively. Mr. W. J. Watson, the inventor of Watsonite mastic flooring, will be connected with the manufacturing end and his wide experience in the roofing and flooring game should prove valuable assistance to the new promoters.

Addition to Old Peoples' Home

Edw. T. Foulkes, Crocker building, San Francisco, has let a contract to Wm. Terry for the construction of a three-story frame addition to the Old Peoples' Home at Pine and Pierce streets, San Francisco, for approximately $10,000.

The same architect has completed plans for the construction of a two-story and basement frame and plaster residence and garage in St. Francis Wood for Herbert Helwig. The house will contain nine rooms and two baths and will have a furnace, brick and tile fireplaces, automatic heater, hardwood floors, etc.

$200,000 Building for Wholesale Section

Messrs. MacDonald & MacDonald, Holbrook building, San Francisco, are completing plans for a $200,000 reinforced concrete store and loft building for Mr. John A. Hooper. It will be constructed on Battery street, between Pine and California, San Francisco, and will be one of the largest and best appointed structures in San Francisco's wholesale section.

$50,000 City Home

Louis M. Upton, the San Francisco architect, is preparing plans for a $50,000 Italian house for Mr. J. J. Tynan, manager and vice-president of the Union Iron Works. The house will have brick veneer exterior and clay tile roof.

Oakland Market Building

C. W. McCall, Central Bank building, Oakland, has prepared plans for a large market building, 200x75 feet, one-story and basement, to be erected on Franklin street, between Second and Third, Oakland. Construction will be concrete and brick, with a great deal of tile work.

Electrical Department

The Isolated Power Plant

By CHARLES T. PHILLIPS, C. E.*

THE isolated plant, properly speaking, is a central plant for the supply of all heat, light and power requirements of an office building, group of buildings, public institution, manufacturing plant, apartment house, etc.

The prospective buyer of an isolated plant equipment is between two fires. The central station salesman has numerous convincing arguments in favor of central station energy, while the machinery salesman has equally convincing arguments in favor of the isolated plant. To choose wisely between the two is an impossibility unless the fundamental principles of isolated plant design are understood and extensive data on all apparatus and local conditions is at hand. Only too frequently the designing of an isolated plant is left to some inexperienced person. The concern investing its money is prone to believe that an installation of this nature consists merely of a boiler, piping, engine and dynamo, and the mere fact that this combination will generate electricity which will light the lamps and turn the motors is a guarantee of a thorough knowledge of all of the requirements of isolated plant design.

The possession of an indicator outfit is frequently a badge of distinction to the uninitiated. The ability to determine, from the mere inspection of an irregular outline traced on a slip of paper, the many defects of the steam engine, has led to the indicator becoming a very popular instrument. All attempts to increase the efficiency and economical operation of a steam plant has been frequently based upon what is shown by an indicator diagram, unmindful of the fact that opportunities for economy are presented in every detail of the plant.

The designing of an isolated plant presents items of vital importance which are too frequently given but scant attention; no study is given the facts surrounding the plant, and, in the majority of cases, actual data has not been obtained on which the design can be based. In determining whether or not the isolated plant will prove to be a saving investment against central station power, the following points should be given consideration: First cost; whether or not suitable space is available; increase in salaries, with plant operation; fuel cost; water cost; miscellaneous supplies; interest on first cost; depreciation charge or amortization and continuity of service.

In estimating the total cost of the isolated plant, there are many variable factors, all of which will not fit every locality. We must therefore ascertain exact conditions before we attempt to arrive at any definite conclusion. The most important items to be considered in locating the plant are: The method of driving the generators; the accessibility for the fuel supply; possibility of obtaining an abundance of pure water at a minimum cost; railroad facilities; space for future growth; opportunity for increasing the load-factor.

The expenses of the proposed plant should be carefully estimated and the general classification of same may be taken as follows: Fixed charges; interest; depreciation; insurance and taxes; plant operating charges; fuel; oil; water; waste, etc.; operators' wages; office expense; bookkeeper; stamps; stationery; chief engineer; maintenance; repairs to building, to steam plant, to electric plant and to distributing system; miscellaneous supplies.

It is not possible to give a detailed description of all the apparatus needed, but a few suggestions are offered. The machinery lay-out should be considered first instead of the building, as is frequently the case, with a view to fitting the apparatus into fixed conditions already imposed. The first consideration should be the use to which the plant will be put. If it is to be a manufacturing concern, the motors will be the most important item, and lighting, etc., secondary. If it is to be an office building, a state or government institution, elevator motors or the lighting will be the prime factor to be considered. Thus it will be seen that the actual apparatus in the plant is only secondary to the devices that it will operate. The generator selected will then depend upon its ultimate use, for the reason that the kind of current, the voltage and other features should be selected to serve best the consuming devices that have been selected as most important.

Until recently, direct current at 220 volts has been used almost entirely for plants that have a large motor load, es-

*Pacific Building, San Francisco.

pecially elevator motors. If lights are operated on the system, either 220-volt lamps are used or some type of generator, or generator and auxiliary apparatus is used where 110 volts can be obtained in addition to the 220 volts. This is frequently done with a three-wire generator, a generator and storage battery or balancer-set or an adjustable resistance. The later scheme is not used very often, due to the energy loss and poor regulation. The selection of the type of direct current generator then depends upon a number of factors. When the load is such that alternating current can be used, the voltage, frequency and the number of phases have to be determined. In any instance it may be well to consider the kind of service furnished by the local central station, as the central station may later make an attractive rate that would justify the buying of energy, or service may be taken at off-peak periods.

When the use of steam for heating is not required, as is frequently the case in industrial establishments, the selection of a prime mover is governed by the balance between investment and efficiency. High thermal efficiency may be obtained in the modern oil or gas engine, but there may be other factors which would make a choice of this type of prime mover a mistake and the less efficient steam turbine or reciprocating engine would be a much better investment. Occasionally a combination of prime mover and storage battery will be required to give the best results or a combination of steam-driven prime mover and gas or oil engine.

The big factor in a small plant is the high cost of attendants, and the fuel and other operating items are secondary to the pay-roll, but where high pressure steam is required for other purposes than for generating electricity the same operating force can usually be utilized without increasing the attending cost.

The cost of money can not always be taken at the prevailing rate of interest. It may be worth 2 per cent to one concern and 20 per cent to another, and this item should receive the consideration due its importance.

Reliability is an important factor, but within the last few years it can be said that both central station service and service from the isolated plant have increased to such an extent that it is only on rare occasions that the service is interrupted.

It is a well-known fact that the off-peak operating period of the isolated plant is where its weakness lies. The same applies to the large central station and every effort should be made to increase the load factor. This, in some instances, may be brought about by developing the diversity factor.

The introduction, on a commercial basis, of the small steam turbine has been responsible for many surprising changes in ideas and general practice in isolated plant design. The basing of steam consumption on kilowatt-hour output and the marked variation in efficiency with the different degrees of vacuum, the introduction of the higher pressures of steam and the use of superheated steam have all tended to confuse the man that has been operating reciprocating engines.

The use of the steam turbine operating against a back-pressure above the atmosphere, or the automatic type of turbine of the multiple stage type, designed to supply both electric power and exhaust steam efficiently, at the same time enjoying the benefit obtained from the use of a high vacuum, is a radical change from the former steam station practice.

The rating of boilers in horse-power is another misnomer, as the quantity of steam that can be obtained from a boiler will depend upon the kind of fuel used and the skill of the attendant. The rating of the newer types of prime movers in kilowatts also adds to the complications.

It is a well-known fact that the greatest opportunity for improvement in steam-plant economy lies in the boiler room, and it is there that the losses are hardest to detect. The limitations in economic performance of the prime mover

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are well understood and easily maintained, but in the process of combustion in the furnace and the heat absorption in the boiler many factors that effect economy are obscure and are not seen or understood by the operating engineer. The forcing of the boiler to operate as high as 200 per cent overload is now a common occurrence and furnace temperatures have increased within the last twenty years from about 1800 degrees to 3000 degrees Fahr. Where the peak-load is of short duration, the forcing of the boiler above its normal rating should be given careful consideration.

While this article has given briefly a few of the factors to be considered in isolated plant design and some of the pitfalls to be avoided, it must not be taken to cover the entire field, as this would be impossible. Every design varies to such a large extent that, without a detail knowledge of each particular case, no description can be given of a plant that could be considered as typical.

Apartment House Cooking and the Electric Stove

THE electric range is peculiarly well adapted for apartment house service. The character of construction of the buildings, and the mode of living of the tenants, make it ideal.

Space in an apartment house especially in the kitchen is usually limited. The advantage of a compactly constructed electric range is therefore apparent.

A range in an apartment is only needed for cooking operations, as hot water and heat are usually supplied from the basement. This condition makes the electric range far superior to fuel burners.

Apartment house tenants move frequently. Each new occupant insists on having the woodwork repainted and the walls retinted and repapered. The very nature of the electric range which does away with all smoke, grease, dirt, and filth makes this expenditure on the part of the owner unnecessary.

The utensils used on an electric range are easy to clean both inside and out on account of the absence of soot and burned foods. This makes the kitchen work easier, quicker and more attractive to the tenants.

Silverware tarnishes quickly where fuel stoves are used. Such is never possible, however, where the cooking is done electrically, as there are no products of combustion.

Many people are careless and fuel stoves in apartment houses are a constant menace. The danger of loss of life and property by fire is entirely removed where electric ranges are used.

Occupants may be asphyxiated by the use of gas as a result of the supply being temporarily cut off; on account of children carelessly opening the valves; or through mistake of the cook or housewife. The user of an electric range is absolutely free from all danger.

The ventilation in apartment house kitchens is often very poor and where some fuels are used the fumes are poisonous and the fire is constantly burning oxygen out of the air. The electric range on the other hand gives off no poisonous fumes and destroys no oxygen whatever.

Small kitchens being the rule rather than the exception in an apartment house, the heat from a fuel range often becomes unbearable. The housewife using an electric range can dress before preparing a meal and be assured that she will suffer no discomfiture whatever on account of the heat.

From the central station company's standpoint the apartment house business is very desirable. The load is mostly of an off-peak character. The load factor is good. The diversity factor is not excelled by any other class of business and the demand is high. Curves taken on several large apartments show that the connected load in cooking apparatus is often as great as seven times that of the maximum demand. The apartment house business is easily the most attractive cooking load that can be secured.

It is the opinion of the sub-committee that the magnitude of the electric range business in the future is largely, if not entirely up to the manufacturers to determine. In other words, the efficiency, durability, flexibility and price of the coming electric ranges will govern the volume of business which is to be handled.

It is apparent that in the Pacific and Rocky Mountain States the central stations are alive to the importance of this field of development, and it is also apparent that an interest is being created in electric cooking in all parts of the country from the Pacific to the Atlantic. The public is becoming curious as to what are the advantages of electric cooking, and this curiosity may be easily changed to desire, if the products of the manufacturers fulfill the requirements and meet the conditions laid down.

There must be constant improvements in developing the range itself. At the present time it has become the custom to say "develop the electric range along the lines of the modern gas range." This is a good basis upon which to start, but the future development of the electric range may be along lines of its own, rather than a continual imitation of the gas range.

When the first automobiles were put upon the market they resembled buggies and carriages formerly drawn by horses, but gradually the automobile manufac-

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turers have developed machines with entirely different lines, better adapted for the work which is put upon them. It is quite probable that the development of the electric range will point in a similar direction.

For some time past there has been a fear on the part of electric range manufacturers and central station managers that the electric cooking load would seriously affect the daily and annual peak of the central stations, and consequently there was a tendency to keep down the size and capacity of the burners. However, experience has demonstrated that the cooking load will not seriously affect the peak, and that under ordinary conditions, owing to the diversity factor, not more than 10 per cent of the connected load in electric ranges is likely to come upon the peak at one time. Consequently there need not be the fear of increasing the capacity of the burners so that the cooking may be done more quickly, and thus better meet the competition of other fuels.

The most important factor in the satisfactory operation of an electric range is the heating element. It is essential that the burners be constructed initially so that they will be able to withstand the use and abuse which may be put upon them. It is absolutely essential that the heating elements which are liable to burn out should be readily and quickly replaced, so that there may be no unnecessary delays in repairing. The average housekeeper is willing to pay the price for the service upon the condition that cooking can be done quickly, and with as little trouble for repairs as is caused by other cooking appliances and other fuels.

The majority of central stations interested in the development of the electric range business are willing and anxious to make liberal expenditures and concessions in order to induce consumers to cook by means of electricity, and such matters as adjustment of rates and local advertising will undoubtedly receive the attention they deserve from central station managers.—Extracts from a report of the N. E. L. A. Electric Range Committee.

Electrical Posters in Anderson Galleries

THE National Electrical Posters, comprising a collection of some 300 selected poster works, many by the foremost artists of the United States, have been placed on public exhibit in the Anderson Galleries, Madison avenue and Fortieth street, New York City.

These posters were received in a $2,200 competition open to the artists of the world and concluded on June 1st. The contest was conducted by the Society for Electrical Development, 29 West Thirty-ninth street, New York City.

The purpose of the competition is to obtain a design for the country-wide electrical celebration, December 2 to 9, to be known as "America's Electrical Week," which is backed by all the great electrical interests of the United States.

More than 780 posters, all of a uniform size, 32 inches wide and 38 inches high, were received by the Poster Committee during the two months of the competition. These posters come from practically every large city of the United States, Chicago alone sending more than 120 of the total number. Designs were submitted by artists of the highest standing as well as by art students and by high school students. The works of the younger artists were encouraged because of special art student and high school prizes in addition to the $1,000 grand prize, the $500 second prize and the $300 or public choice prize.

To determine the winner of the latter prize public exhibitions of the 300 best posters submitted will be held in New York, Boston, Philadelphia and Chicago during the month. At these exhibitions each visitor will vote for that design which he or she favors. The highest total of votes registered by the public will decide the winner of the Public Choice Prize. In this way the committee hopes to obtain a very good idea of what the public fancies in poster art. The $1,000 poster will be the official emblem of the national celebration. It will be reproduced on all forms of advertising media from the poster stamp to the bill board.

The number of posters received and the prominence of the artists competing establishes a high mark of poster effort in America. Although the competition is anonymous and none of the artists are known, inquiries received by the Poster Committee indicate that, with two or three exceptions, all of New York's noted illustrators and poster artists have submitted work in the contest.

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Contractor Must Be Paid

A decision rendered recently by the Supreme Court in a case that dates back to the day of the San Francisco fire of 1906 establishes the legal principle that a contractor must be paid for work completed prior to a fire and upon which an installment is owing, whether or not he receives a certificate from the architect to the effect that the work in question is completed.

C. W. P. Ahlgren contracted to build a nine-flat structure for Julia A. Walsh. He was to be paid in installments and was paid $9600 prior to the great fire.

On the day before the fire he completed another part of the work, and there was then due him an installment of $2500. The fire came along and destroyed the building. He sued for the $2500 and won in the lower court.

The defendant appealed, contending that Ahlgren must reconstruct the entire building to the point where he left off when the fire came before he could claim the $2500. The Supreme Court affirms the lower court's decision.

Book Review

CITY PLANNING, a Series of Papers Presenting the Essentials of a City Plan. Edited by John Nolen. D. Appleton & Co., New York. $2.00.

To date there has not been issued in English any such complete review of all the sides of City Planning as contained in this new and most interesting summary. Each chapter has been written by one of the foremost authorities in practical City Planning and on that part of the work on which he is most particularly qualified to speak.

Mr. Nolen has himself very ably discussed the Subdivision of Land and Park Systems. There is an important chapter on Zones by Frank Backus Williams, probably our first American authority on this subject. Public buildings we should expect to have discussed, as they are, by Edward H. Bennett, who has for many years been one of the foremost architect City Planners. Of the engineers there are chapters by E. P. Goodrich, George R. Wadsworth, B. A. Haldeman and John Vipond Davies.

The fundamental data for city planning work is most constructively presented and ably covered by George B. Ford, architect and city planning consultant to the City of New York, whose thorough and fundamental researches have done so much in the past few years to get city planning out of the rut of mere talking about it into actual accomplishment. The other chapters in the book will be equally valuable to those interested in civic development.

This country owes a great deal to John Nolen for his consistent and quietly effective steps to get our careless cities to planning seriously and with forethought for their future. We all know that every architect and engineer has at one time or another been stimulated, by contact with this problem of the city, to work out if not to offer practical suggestions for improvements. But we have been all working in the dark. This book will go far to clear the atmosphere and to put us on the track of the side of city planning to work in.

PROBLEMS OF COMMUNITY LIFE, an Outline of Applied Sociology. By Seba Eldridge. Published by Thomas Y. Crowell Company, New York.

More than fifty problems of community life are presented and analysed in this little volume, which is in the nature of a reference or text book.

Headings of the subject-groupings are Labor Conditions, the Housing Situation, a Health Program, Social Aspects of Public and Private Education, Leisure Time Expenditure, Community Planning, Crime and Punishment, Philanthropy and the Social Problem, Social Forces and Politics and Government.

While primarily descriptive and only secondarily critical and constructive, this study traces the lines which our social, industrial and political institutions are destined to take in their next phase of development. The author has offered suggestions for reform only in those matters where the need is urged by "the logic of the situation under analysis," that is, where reform is already regarded as inevitable.

Other Books Received.

Perspective, Ben J. Lubschez, D. Van Nostrand Co. Price $1.50. Engineering as a Career, edited by F. N. Newell, D. Van Nostrand Co. Price $1.00. My Growing Garden, J. Horace McFarland, Macmillan Co. Price $2.00. The Lure of the Land, Harvey W. Wiley, The Century Co. Price $1.40. California Garden Flowers, Wickson, Pacific Rural Press, S. F. Price $1.50. Satellite Cities, Graham R. Taylor, D. Appleton Co. Price $1.50. Gardening in California, Landscape and Flower, John McLaren, A. M. Robertson, S. F. Price $3.75.

Personal

Octavius Morgan of Los Angeles is in New York, where he attended the semi-annual meeting of the board of directors of the American Institute of Architects, of which he is a member. Before returning home Mr. Morgan will visit several of the larger Eastern cities.

Praise for California Schools

That the fame of California's school buildings has gone far and wide is shown by a letter received by State Superintendent of Schools Edward Hyatt from W. J. Anderson, director of education, Wellington, New South Wales. Anderson requests that standard plans for school buildings approved by the State Board of Education, as well as by the Sacramento school authorities, be sent to him.

Superintendent Hyatt will send to New South Wales plans of the California open air schools, the William Land school in Sacramento and the new schools of Oakland.

Two Big Irrigation Projects

Two irrigation projects in Tulare county, Cal., calling for a total expenditure of about $2,400,000, probably will be placed under contract early this summer. These improvements will require the purchase of a large amount of pumping equipment and a considerable mileage of pipe line. One of the developments is for the Terra Bella Irrigation District of Terra Bella; the other is for the Lindsay-Strathmore Irrigation District of Lindsay.

The total cost of this work is estimated at approximately $1,400,000 in bonds, which is to be the amount of the bond issue. The entire plant will be constructed during the coming year, bids to be opened July 27. The secretary of the district is Mr. C. W. Wright, Lindsay, Cal. Mr. Stephen E. Kieffer, consulting engineer, 57 Post street, San Francisco, is the chief engineer.

Best Co. to Build Factory at San Leandro

The C. L. Best Traction Co. at San Leandro has announced its intention to build a new plant in that city at a cost of $70,000. The company had planned to move to Hayward, but the people of San Leandro raised $20,000 to bring the concern to San Leandro. The buildings will be constructed at the foot of Davis street near the Southern Pacific depot. The main structure will be 650 feet long. A second building will be 275 feet long. The company at present is operating a plant in Elmhurst, which will be dispensed with.

Theatre and Stores for Los Gatos

J. A. Marshall, owner and builder who has in the past done considerable building in and around Oakland and Berkeley, has started construction of a two-story moving picture theatre at Los Gatos. He will also build four large stores, construction to be frame and plaster, with plate glass fronts.

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The Contractor

HIS TROUBLES AND SOME OTHER THINGS

The Relation of a Contractor to the Building Business in General.

By JOHN C. AUSTIN, Architect.*

I believe that I am expected to say something regarding the relation of a contractor to the building business in general. This is a big subject; it would fill a large book, and probably when the book was finished it would not be worth the paper on which it was written, as building conditions change so often and so materially.

In the past thirty years buildings and building methods have changed more than in any other technical business, so that an expert builder of thirty years ago (unless he had studied new conditions as they arose) would be worse than nothing in guiding the construction of a building at the present time.

Thirty years ago our elevators were as different from those now in use as a modern racing automobile is to the old-fashioned hearse. Vacuum cleaners were unknown; electric light and power were in their extreme infancy; steam-heating was used in a very cumbersome way; and buildings over four stories were very rare owing to that being the limit of height that one cared to walk.

The modern building might be compared to a sum of compound interest,—every century preceding the present one has shown some gain, each century and each year has shown a greater proportional gain than the preceding one. The past twenty-five years have shown greater gains than the preceding seventy-five, and the past seventy-five years more than the preceding two hundred, and so on in the same way that interest accumulates on your note in the bank if you neglect to pay it.

With all the new inventions and appliances it is very evident that the old guessing methods must be abandoned and efficient systems installed, whereby the contractor (like any other educated business man) will be able to submit a bid on a building, knowing that if he is selected to do the work that he (like any merchant) will receive a reasonable profit for the work done, capital involved, and knowledge displayed.

Every reasonable human-being who builds must and does know that a contractor must make a profit; yet some of the contractors seem to feel that they must pose as philanthropic institutions.

A good deal of trouble is caused to the architect, and to the owner, and very often to the contractor on account of the careless ways in which bids are submitted. It is a common thing for a contractor to spend days in figuring up the cost of a building, and then to write out his bids so hurriedly that he leaves out a large portion of the material.

Only last week I opened the plumbing bids for a grammar school to be built at Downey, and it was apparent immediately the bids were opened that some one had made a mistake. Can you imagine any plumber being so careless as to leave out a thousand dollars' worth of marble on a $4000 job? This actually occurred. The contractor called on me and stated that this was a fact, and that if he were compelled to go ahead with the contract he would sustain considerable loss. I then took up the matter with the next plumber, ask-

*Address delivered at the Installation Dinner of the Builders' Exchange of Los Angeles, June 15, 1916.

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ing him if he were ready to sign a contract and give bond for the amount of his bid if I rejected the lowest bid; and to my astonishment he said that he also had made a mistake, that he had failed to include in his bid the cost of the toilets.

This left me with the two lowest bidders claiming that they had failed to include two very important items. Each of these bidders had submitted a certified check for somewhere between $150 and $200 as guaranties that they would enter into contract and give bonds for the amount of their bids.

The lowest bidder could have been taught a $150 lesson in efficiency if the school board had wished to confiscate the certified check and appropriate the money to make up any deficiency between his bid and the bid next above it. The school board of Downey, however, considered that the mistake was not a willful one, but one due to ignorance and lack of efficiency, they, therefore, returned the checks and ordered new bids to be taken.

This has caused me a great deal of trouble and some expense. I have rewritten the specifications, and the school board is now advertising for new bids, and the work of letting the contract as a consequence of this mistake has been delayed about three weeks. All of this trouble could have been spared had the contractors taken the common precaution of back-checking their work.

Something like $8000 was lost to the city of Los Angeles owing to the incorrect form of bidding and the rise in the cost of material between the time of rejecting the incorrect bids and the final bid on which the work was awarded.

There is nothing more pleasing to the architect (who is often a buffer state between two contending bodies, like Belgium, Poland, etc.) than to hear the owner say, "I am pleased with the work done and I am astonished at the small amount of trouble that I have had"; and to hear the contractor say "I also am satisfied with the work that I have done and with the profit that I have made."

The first sign of trouble in an architect's office is when the contractor tries to substitute something "just as good." He fails to recognize that the architect and owner have been studying the plans and specifications for weeks, possibly months, before he sees them; and that almost every time he suggests a change that he is in a measure destroying the homogenity of the whole scheme.

There are times when the contractor will suggest a change which will have but one purpose, viz.:—To benefit the building; but usually the change is only suggested to benefit his bank account.

If a contractor is allowed to substitute one item for another, then those who figured against him are not getting fair treatment, because it then makes it possible for a contractor to submit a bid at or near cost and then to obtain a profit from the items that he can persuade the architect and owner to allow him to substitute for the items specified.

The "or equal" clause is the greatest curse that the contractor, the architect, and the taxpayer has had to deal with in the construction of public buildings. In the past it has prevented the architect from making a definite specification of his needs, and it has made it impossible for the public to know what it was going to get before the building was completed.

You all know that uniformity of price is not an evidence of uniform working value and efficiency, and that any "or equal" clause is the hole through which every one crawls in order to make a greater profit.

In public work I have used the following clause, and until I can find a better one I propose to stick to it:

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"The contractor must submit a bid covering every item that is specified; and should he wish to suggest any substitute that he considers equal in value and efficiency with the one specified, he shall state what the item suggested is and what the difference in cost is, if any.

"If substitutions of materials (equally good) are offered at the time the bids are submitted they will be considered, and arrangements made for the change (if a change is desired), before a contract is entered into.

"If no items are suggested as substitutes at the time the bids are submitted, then no deviations will be allowed from the materials specified."

If you will analyze the clause you will see that it complies with the State law and yet makes every contractor figure on a uniform basis; it sets a time at which all substitutions must be offered; and it insists upon the difference in cost "if any" being stated in the bid; it prevents political pulling and hauling; and it prevents collusion of any kind.

Every year the interest of the architect, the contractor, and the owner are being more definitely defined. The contractor's part is not so hard provided the plans and specifications are well and accurately drawn, and if they are ample enough to fully delineate and describe the work to be done. If there is an insufficient quantity of drawings and a meager specification, then the contractor (if he submits a bid) must guess what the architect means, and he is apt to be right, or wrong as the architect's and owner's caprice dictates.

I consider that the contractor who signs a contract and who gives a bond to cover the construction of a building that is represented by defective and incomplete plans and specifications to be an absolute fool; he is always stuck, because the architect who is dishonest enough to pretend to render architectural service and then to do it inadequately is capable of exacting everything that it is possible to cajole the contractor into doing; even to doing work and furnishing material that he has not figured upon.

When a contractor signs a contract with imperfect plans and specifications attached, he is courting trouble and financial loss. The owner has a hazy notion of what he wants, and whether the plans cover the point or not "he still wants it"; and if the architect's work is imperfect the contractor finds himself in the position of having to do work that he has not charged for in his bid or face a law suit. The law suit costs

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money, and so does the furnishing of some item that is not definitely called for and as a consequence not figured upon.

Efficiency and honesty must be the slogan for both builders and architects. To be efficient the builder must know his business and have sufficient funds at his command to carry on the work that he undertakes without being dependent on any materialmen or sub-contractors for his financial backing. In other words, he must (like any merchant) have funds at his command in order that he may buy where he chooses. How many contractors have been ruined by having to buy from old creditors in order to retain their friendship, and in the hope that they would in some way be able to wipe out the old debt.

I have heard contractors say, "the architect shouldn't have let that job to —; he knows that his figure is too low." There is a lot of truth in that, as I cited in my description of the careless method the contractors pursued in submitting bids on the Downey grammar school; yet the answer is, why do contractors continuously and always make mistakes, why are they not efficient enough to submit a correct bid for the work (with a profit included)? If the lowest bidder is excluded, he claims that the architect is a crook and that he has shown undue favoritism to the one who signs the contract.

The time has indeed come when the business of contracting and the profession of architecture must each be separately and definitely defined. The architect must abstain from doing what he knows to be the legitimate work of a contractor.

Lots of work has been done from architects' offices under the guise of day-work, which is nothing more than the architect becoming a pettifogging contractor. I say pettifogging and I mean it, for he is trying to do something that he is not equipped for by education or in other essentials necessary to the successful carrying on of the business of building and contracting.

The usual "day-work" from an architect's office resolves itself into the splitting up of the work into many small contracts, and the only work that is done "by the day" is the carpenter's work. The excuse offered by the architect is that he can get better work done that way than by the ordinary method.

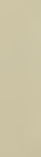
I entirely disagree with this, for if the architects deal with real contractors, and if they make their needs known before the contractors submit their bids, they will be in a position to demand all that they should receive under their contracts.

The time has arrived when architects must stop filibustering through a contractor's territory, and parallel with that, the contractors must "keep off the grass" with regard to architecture.

Neither can hope to make a success in a business where they lack special training. There was never a building erected in the world's history noted for beauty, stability, or efficiency that was not designed by an architect and built by a builder.

The combination of the two under the heading of "Construction Companies" has never done a notably beautiful thing; neither has it advanced art, science, finance, or efficiency one iota. All that the "Construction and Architecture Companies" have done is to place the building business before the public in a false light by pretending to do what is an impossibility, viz.:—That of constructing buildings below a figure representing cost and a reasonable profit.

Architects and builders must co-operate in every honorable way for the good of building conditions; and in doing so they must each follow their callings,—the architect follow that of architecture, and the contractor the business of building. If they each do



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their part conscientiously and well, the "Construction Companies" who claim to combine both architecture and building will soon see the error of their ways; and if they do not the public will find that the buildings that have been erected in a legitimate and ethical way so far outclass those that are erected by the nondescript companies in beauty and stability that only one who wishes a good return for his money will follow the beaten track. There are too many men calling themselves architects who have not the lightest claim to the distinction; the same statement goes for many calling themselves builders.

One branch of efficiency is the knowledge of how to do the most in the shortest time. One step in that direction has been taken in the establishment of the Metropolitan Exhibit. This exhibit is a gathering together of many items used in the construction of buildings, and, as I have said many times before, gives an architect and his client and the builder an opportunity of seeing a hundred things at one point rather than going to a hundred places to see one thing at each place. I consider that this exhibit is a step in the right direction, as it stands for efficiency and conservation of time.

THE SALESMAN'S REVERIE

By an Anonymous Contributor.

I dreamed I was in heaven—
No contractors were there
Or other arbitrary men
That cause us to despair.

I bid upon the bricks of gold
That pave the Heavenly sky,
And not a soul was there to scold:
"See here, you boob, you're high."

* * * *

The architect to the builder said,
Heaving a deep, chesty sigh:
"This job I preferred to have you had
But, you know, your bid is too high."

"Oh, never mind," the builder says:
"I'll take it anyway,
I'll cut my price ten thousand bucks—
The Subs—they'll make it pay."

He got the job; the subs appeared
Like flies on a custard pie;
But to one and all the builder said:
"You must cut your bid; you're high."

The builder says, "You stand no show,"
While stalling to the dub,
"I didn't use your price, you know,
But you're my favorite sub."

"Your bid, old sport, was twice the size
It really ought to be——
The job is yours if you cut the price
By dividing it by three."

So the sub he cuts,
And the job he gets,
And he wires the news to the house;
He spends all the "beans"
He has in his jeans
And he gathers a terrible souse—he does.

* * * *

And the architect cries,
As the job he spies:
"See here, this will not do;"
But the salesman can't see
Why the goat he should be
When all of the job is through—but he is.
(*And his firm.*)

Pacific Tank Company to Have Oakland Factory

The Pacific Tank and Pipe Company is to build a new plant on High street in Oakland. E. C. Pitcher, who is connected with the Pacific Tank Co., and also the National Mill & Lumber Company, states that the new buildings will house the plants of the two affiliated organizations, and will represent an expenditure of nearly a half million of dollars. Five buildings are to be constructed, application for the first having been filed with the Oakland Building Inspector. The buildings probably will be of frame construction, with concrete foundations. The Mercantile Box Co. will also be accommodated in the new plant. The offices of the three firms will remain in San Francisco as at present in all probability.

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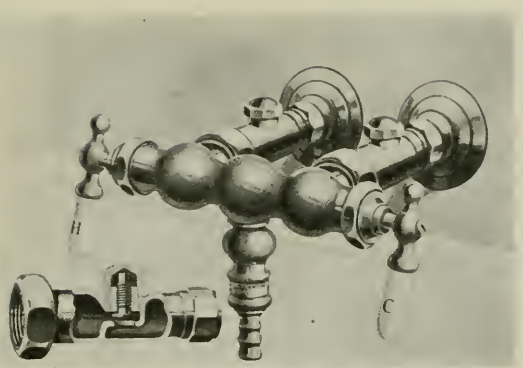

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Since the advent of the new recess or built-in bath tubs H. Mueller Mfg. Co. of Decatur, Ill., and San Francisco, have introduced a bath cock especially adapted for this device which does away with all concealed valves or fittings, the controlling valve being in shank of cock. In roughing in it is only necessary to bring out two nipples from the riser.

Mr. Leary, the Pacific Coast manager of the H. Mueller Mfg. Co., reports a gratifying increase in all departments of their business and says that the Mueller fixtures, which are unconditionally guaranteed, are in evidence in new buildings throughout this section, including those engineered or owned by the plumbing contractors themselves—a personal and convincing testimony to their value and durability.

As a result the installation is a practical one with elimination of considerable of the expense as compared with the old methods and styles. They also make basin cocks to match the bath cocks, both being of the quick-opening type, with either porcelain or brass indexed handles and are constructed on round body, Colonial pattern. These cocks are being installed in many of the new and up-to-date hotels, apartment houses and residences.

Lane Hospital to Be Concrete

Revised drawings have been made by Messrs. Bakewell & Brown for the Lane Hospital, San Francisco. Reinforced concrete will be substituted for brick and steel construction, which will reduce the cost about $75,000. The building is being erected by George Wagner Hearst building, San Francisco, at a cost of approximately $400,000.

National Lead Buys Bass-Hueter and S. F. Pioneer Varnish Works

There has been considerable discussion among the trade, and many reports have been circulated in regard to the purchase of the Bass-Hueter Paint Company and the San Francisco Pioneer Varnish Works by the National Lead Company. With a view to securing a dependable statement in regard to the transaction, a representative of this magazine called upon Mr. H. T. James, for years the directing force of both companies.

Mr. James stated that it was well known among the trade that the National Lead Company owns and controls the Heath & Milligan Company of Chicago, and that they concluded it would aid their white lead business on the Coast if they could secure a proper representative in the paint and varnish line; and that after looking over the entire field thoroughly, they decided that, if obtainable the business of the Bass-Hueter Paint Company and the San Francisco Pioneer Varnish Works would be preferable to that of any other.

The combination of the two will eliminate to a certain extent the San Francisco Pioneer Varnish Works. In other words the varnish business will be run by the Bass-Hueter Paint Company as one of their departments. The high standard of the Hueter varnish will be maintained, and the paint and varnish business both will be conducted on the principle of expansion.

The purchase included the San Francisco business, factories, real estate and all branches as well. The business will be conducted as heretofore under the name of "Bass-Hueter Paint Company" and there will be no change whatever in

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the management, or as to the factory superintendents.

Mr. H. T. James, who has been with Mr. Hueter for many years, will retain the general management of the entire business; Mr. A. A. Schumann of the varnish works and Mr. C. C. Del Curo of the paint works, both of whom have aided materially in building up the business, will remain in charge of their respective departments; Mr. J. H. Jennings, who has had charge of the office, will act as auditor for the entire business.

Mr. James anticipates that the natural development of the business will necessitate their extending their present plant, or building an entire new one in the near future.

T. P. Jarvis Co.'s New Rotary

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The third bi-annual competition for the Le Brun Traveling Scholarship, founded by Pierre L. Le Brun, will be held in the summer of 1916. It is open to any architect, a citizen and resident of the United States, between twenty-three and thirty years of age, and who is not, nor has been, the beneficiary of any other traveling scholarship, and who has had at least three years' experience as draughtsman or practicing architect. The amount is $1,000 and the period of the scholarship not less than six months.

Each competitor must be nominated by a member of the New York Chapter, A. I. A., who shall certify in writing that the above conditions are fulfilled by the nominee and that in his opinion the nominee is deserving of the scholarship.

Applications must be accompanied by a statement of residence, citizenship, age, experience and general qualifications and by the necessary nomination and certification from a member of the New York Chapter, A. I. A. Those not having the acquaintance of a member of the Chapter may avail themselves of the services of any well known architect who can vouch for them to a member of the New York Chapter, with whom he is acquainted.

Architects throughout the country are requested to bring this notice to the attention of their eligible draughtsmen.

BERTRAM G. GOODHUE,
2 West 47th Street, New York City.
Chairman, Committee on Le Brun Traveling Scholarship.

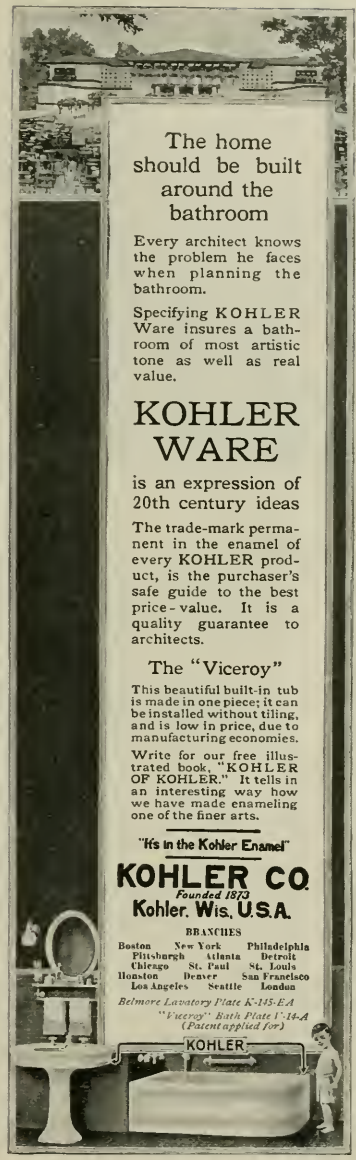
Brick and Tile Plant

Ground has been broken for the erection of a $20,000 plant for the Union Brick and Tile Company, a local firm recently incorporated, on their forty-acre tract on the tidewater two miles north of Modesto.

William M. Anderson, superintendent of the company, says that the plant will be in operation to manufacture brick and tile within six weeks and the kiln for the burning of brick will be completed in three weeks. The company intends to use bricks of their own manufacture in the erection of the necessary buildings

Country Estate Improvements

Jos. S. Bogart, Mills building, San Francisco, is the contractor for the extensive improvements to be made to the estate of the late D. O. Mills at Millbrae, and which is to include cottages, keepers' lodge, green house and considerable concrete and cement work, ornamental iron gate, etc.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Santa Barbara Exhibit

Miss M. L. Schmidt of the Metropolitan Exhibit, Los Angeles, is planning to establish at Santa Barbara a branch exhibition of building materials. She has secured ground floor quarters at 722 State street and has taken some thirty exhibits suitable for the better class of residences for exhibition. The exhibition will be placed in charge of Mrs. A. C. Arnoldy, for some years in the office of Architect Myron Hunt.

Big Southern California Project

The plans for one hundred cottages, depot, college and church buildings, which is proposed to be built on a townsite in San Bernardino county for the Industries Educational Film and Land Company, 287 I. W. Hellman building, Los Angeles, are now completed. The company is desirous of going ahead just as soon as they have decided on an individual builder who can give his entire time to the company and meet requirements.

New School House for Marysville

Plans have been prepared by Architect Chester Cole of Chico for a one-story hollow tile and stucco school house for the city of Marysville. The building will contain six class rooms and an assembly hall, and will have a warm air heating system. The estimated cost is $20,000.

Los Angeles Apartment House

L. T. Mayo, 530 Black building, Los Angeles, will spend $60,000 in the construction of a four-story and part basement brick apartment house at 672 South Rampart boulevard for F. J. Miller, from plans recently completed by Architect Leonard L. Jones, 607 Delta building, Los Angeles. The new building will contain 108 rooms in suites of two, three and four rooms each. Equipment will include wall bed, electric elevator and steam heat.

Berkeley Stores and Apartments

It has been decided to build a two-story instead of a four-story store and apartment house at Milvia and University avenues, Berkeley, for the McCullough interests, from plans by James W. Plachek, Acheson building, Berkeley. Construction will be frame and brick veneer. Later on the building will be enlarged to a four-story structure.

Addition to San Jose Convent

Plans are being prepared by William Klinkert, architect of San Jose, for an addition to the Notre Dame Convent, San Jose. The improvements will cost $100,000.

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Competitive Designs

The Industrial Bureau of the Chamber of Commerce, Los Angeles, has received a communication from the National Americanization Committee, asking its co-operation in interesting Los Angeles architects in submitting competitive designs in a prize competition for building plans which will aid employers and others who are faced with the responsibility for housing large numbers of workmen and their families in manufacturing communities which have expanded rapidly. Among the directors of this organization are: Mrs. Vincent Astor, Frances A. Kellor, Mrs. Cornelius Vanderbilt and William Fellowes Morgan, president of the New York Merchants' Association.

Eleven-Story Concrete Hotel

Messrs. Morgan, Walls & Morgan, 1138 Van Nuys building, Los Angeles, have plans for an eleven-story and basement reinforced concrete hotel to be erected at Sixth street and Grand avenue, Los Angeles, for Frank Simpson. The building will be 60x80 feet and will contain 150 rooms, with private baths, lobby and several store rooms. Reinforced concrete frame and floors, brick filler walls, brick and terra cotta facing, hollow tile partitions, elevators, steam heat, plate glass, marble and tile work, metal frames and sash and wired glass, vacuum cleaning.

Alterations to White Garage

Architect Henry H. Gutterson, 278 Post street, San Francisco, has completed plans for alterations to the White Company's garage at Van Ness avenue and Market street. The work is to include a mezzanine floor, new show room, staircase, ladies' room, marquise, etc.

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Grant Fee has the contract to build the new Postoffice building at Douglas, Arizona. This is the first contract taken by Fee for more than a year.

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Class "A" Moving Picture Theater

Mrs. Mary E. Seidel, 120 Second avenue, San Francisco, will build a Class "A" moving picture theater on the southwest corner of Clement street and Tenth avenue, Richmond District, San Francisco. Lot is 50x150 feet. The theater will contain a balcony and will have a seating capacity of 1,400 persons. Mrs. Seidel states she will spend $50,000 on the building and about $20,000 more on the furnishings and organ.

Union Iron Works Machine Shop

The Union Iron Works is laying foundations for its new machine shop at Alameda. The structure is to be 100x500 feet and will be constructed of steel and concrete.

An Open Letter To Architects

THIS LETTER is addressed to architects in any city in the United States where building operations are of sufficient magnitude throughout the year to justify a partnership such as is contemplated, and to those who are desirous of obtaining the cooperation of a man of mature judgment, one who is still in his prime, with all the vim and energy of a man in his twenties. The experience gained through contact with men of many minds has made the writer adaptable and pliable rather than set or self-centered. He carried on a successful practice in architecture for about ten years or until unfavorable climatic conditions brought on a general breakdown in health and a complete change was imperative. Now, having fully recovered, he is desirous of taking up the work by entering the office of an architect or constructing engineer as associate or partner. As to qualifications, integrity and rating, he prefers to offer these in a personal letter or interview, to those interested.

He realizes, as many architects do, that double the business is secured and more effectively carried on when the right combination of minds and dispositions are joined under one unit; he therefore inserts this letter with the hope of attracting the attention of one earnestly desirous of finding a man qualified to perform any part of the work in the profession, solicit business and adjust disputes; a real active partner in every sense of the word.

(Signed) MR. BROWN, care The Architect & Engineer of California, Monadnock Building, San Francisco, Cal.

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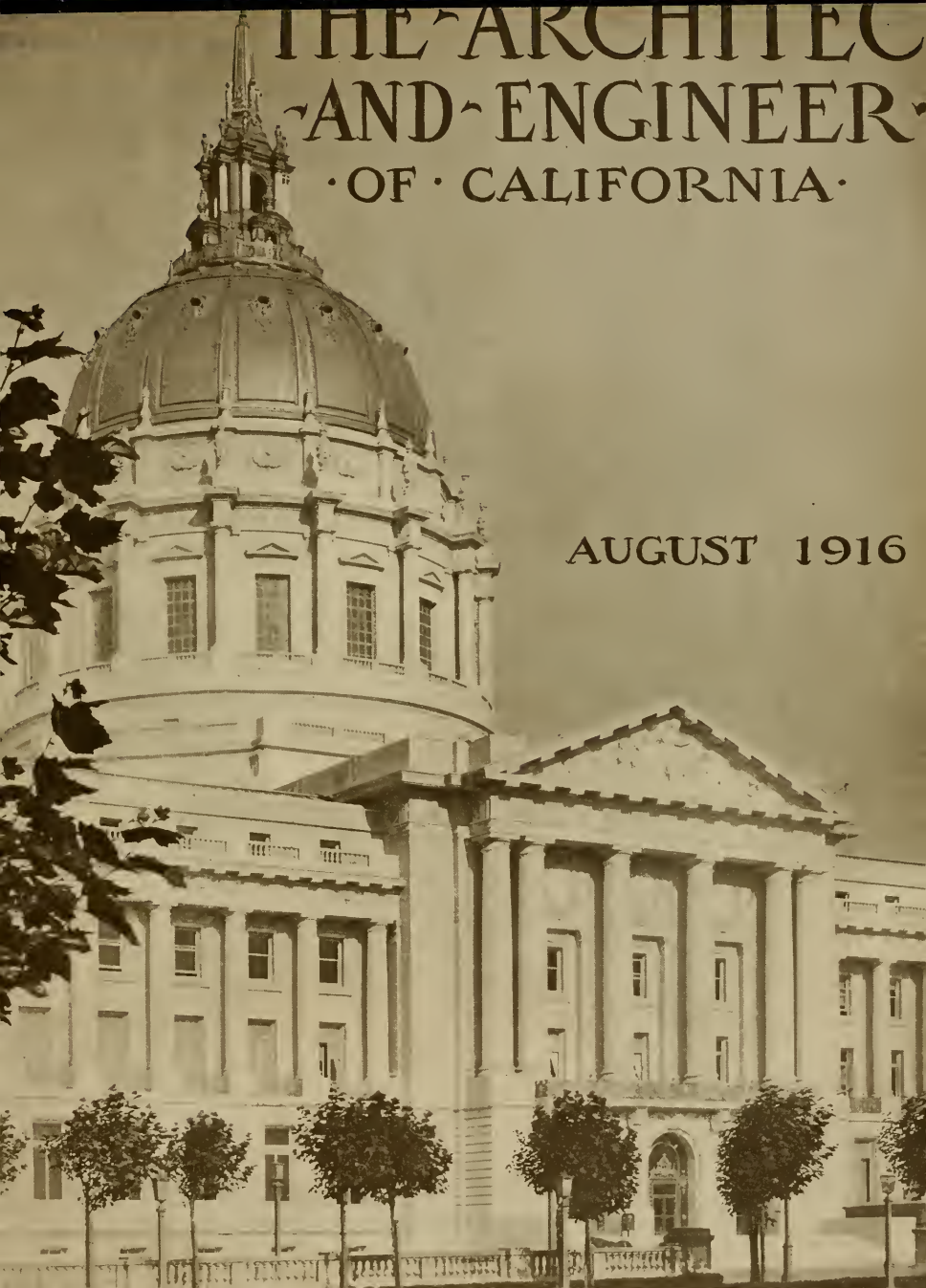

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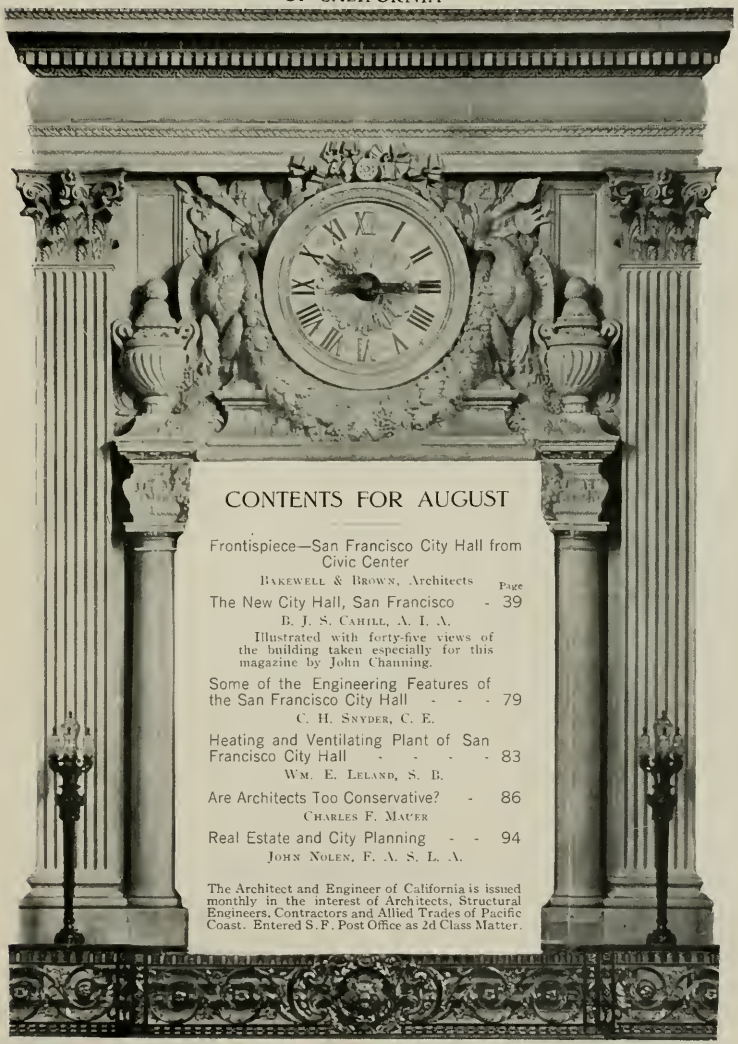

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The Architect and Engineer of California is issued monthly in the interest of Architects, Structural Engineers, Contractors and Allied Trades of Pacific Coast. Entered S. F. Post Office as 2d Class Matter.

Frontispiece
The Architect and Engineer
of California
for August, 1916.

SAN FRANCISCO CITY HALL. VIEW FROM CIVIC CENTER
BAKEWELL & BROWN,
ARCHITECTS

THE
Architect and Engineer
Of California

VOL. XLVI. AUGUST, 1916 No. 2.

PEDIMENT OVER MAIN ENTRANCE FACING CIVIC CENTER

The New City Hall, San Francisco*

By B. J. S. CAHILL, A. I. A.

ONE of the employees of the new City Hall who was kind enough to let the writer into the Council Chamber of the Board of Supervisors and turned on the lights to show off its beauties made several interesting statements which no doubt exactly expressed the sentiment of the city government from the inside, the tenant's viewpoint. In the first place he took immense pride in showing off the good points of this sumptuous interior. "A Boston architect was in here a few days ago," he said, "who claimed that this was the finest city hall in the United States, but I will go further, for there's nothing to beat it anywhere in the world—and I'll tell you another thing, it was built within the time, barring strikes, of course; it was built within the appropriation and, what is more, *it was built without any scandal and without any graft*."

To one familiar with the "ins and outs" of city politics, this prideful admission of these important "withins" and "withouts"—qualifying the city's latest and largest building achievement—is of vital, almost sensational interest to the architectural profession. It is an admission full of most wholesome and welcome significance. It means the passing of darkness, the oncoming of daylight. The architectural world feels this stir and exhilaration and rejoices in it as one rejoices in the glory of the dawn. And it seems very timely to do a little crowing. In the old days it seemed absolutely impossible for the city to put up a public building without hopeless delay, extravagance, graft and scandal. The old City Hall that was destroyed in the calamity of 1906 took a generation

*The illustrations for this article were made for The Architect and Engineer of California by John Channing, a specialist in industrial and educational photography.

SAN FRANCISCO CITY HALL. VIEW FROM CIVIC CENTER
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SAN FRANCISCO CITY HALL, END PAVILION OF SIDE FACADE
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SAN FRANCISCO CITY HALL, VIEW OF TOWER FROM CIVIC CENTER
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to build and cost some seventeen millions of dollars! Its construction was a chaplet of jobs and scandals from the purchase of the land and first foundations laid to the final placing of the leaden lady that topped the tower dome! Most of us remember the murky atmosphere of chicanery that hung around our City Hall in the old dark days. The strong, clean-cut architects of that day instinctively kept themselves clear of this poison belt as one would avoid a grove of Upas trees. Once in awhile a young and adventurous individual with wholesome ideals ventured into the jungle, but he seldom came out without being more or less invalided, if he did not succumb altogether.

Now we do not wish to create the impression that the dawn of the new era came upon us suddenly, as dawn comes up in the tropics. The light came to us gradually, as it should in these temperate latitudes. Nor is our City Hall the first building to herald the new light that has come upon us. None the less, the history of the planning and construction of the City Hall does furnish such a brilliant example of a great and enduring work in civic architecture being carried through with immense credit to the Mayor and Supervisors that it may well serve as a shining example of what the new order of things can accomplish. And it is not so much a new order of things that we celebrate here and "crow over" as it is the normal order. All over the United States today our cities are renewing themselves in splendid structures of admirable design. A veritable army of architects has been in hard training for some decades and has now taken the field. The number of monumental banks, hotels and business blocks that have recently gone up all over the country from the designs of talented and trained architects and their enthusiastic assistants surpasses in mere bulk of achievement anything of the kind ever seen in the history of the world, including the ecclesiastical Renaissance culminating in the twelfth century and the secular Renaissance of the sixteenth. This gigantic building activity does not, of course, imply the unique masterpieces of the ages of Rameses, Pericles or Augustus, nor are we witnessing the birth of a new style such as the Franks and Saracens gave under the sublime stimulant of religion. Ours is a Renaissance more nearly comparable with that of Italy inspired by ideals of this world rather than by ideals of the next.

Nor can we claim the existence of the form-creating genius that made glorious the revivals of Italy, France and Spain. Our achievement consists rather in taming, domesticating, as it were, the wealth of architectural ideas so freely liberated in the mid-Europe we speak of in an age in which things artistic were more highly developed than things economic. In our time and in our land the modern use of steel, the invention of photography, cheap books, cheap travel, pervasive prosperity, swift growing urban communities, universal education and the admirable organization of the profession of architecture are all of them prime elements in explaining the origin of this great American Renaissance, in defining its drift and, perhaps, in indicating its goal.

The development of American architecture exactly parallels the development of the American people. The best analogy that explains the basic essence of each is, oddly enough, taken from the building craft. I allude, of course, to the material known as concrete. Scientifically speaking, that is to say as an ethnologist, there is no such nation as the American nation in the clear, unalloyed sense that Italy, France, Spain and Norway are nations. These are real nations evolved in nature's genealogical laboratory through ages of slow growth; each with its language and religion. Neither is concrete a natural building material in the sense that marble, sandstone, clay and granite are; materials evolved in nature's geological laboratory through even vaster ages of even slower growth. The original overground nations, like the original underground formations, are both, as we say, rooted in the soil, but the artificial commingling of all races known as America, like the artificial mixture known as concrete, are both made up of ingredients that have been

SAN FRANCISCO CITY HALL, END PAVILION MAIN FACADE
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SAN FRANCISCO CITY HALL. DETAIL OF DOME
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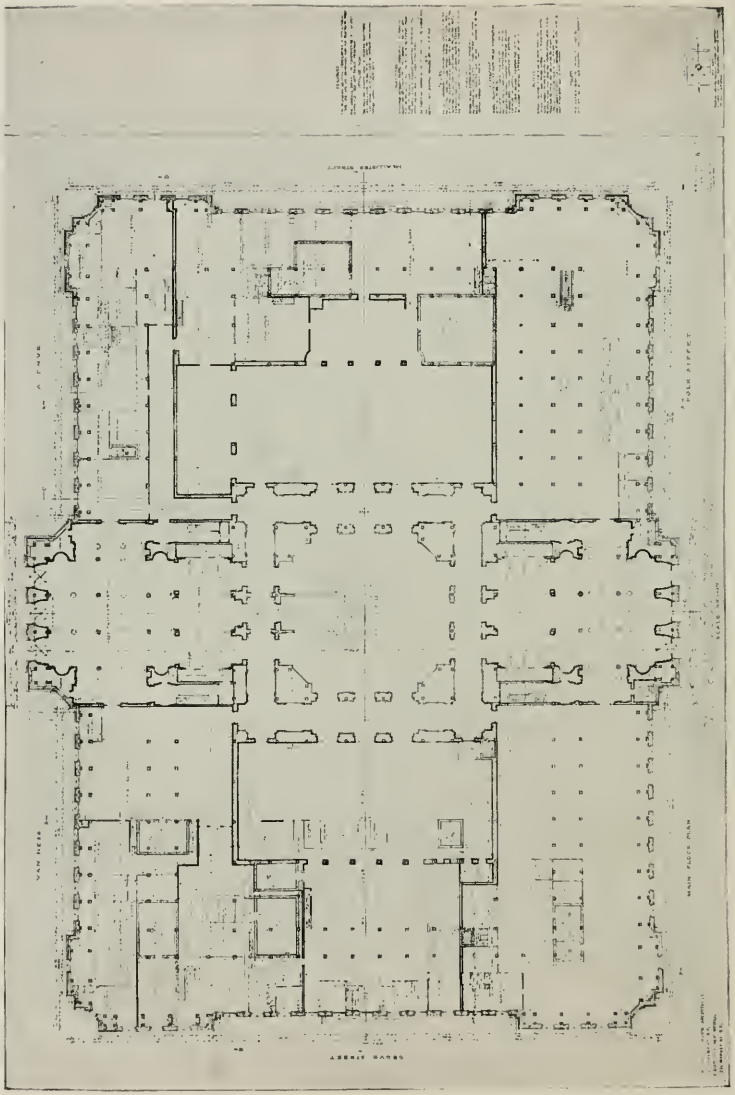

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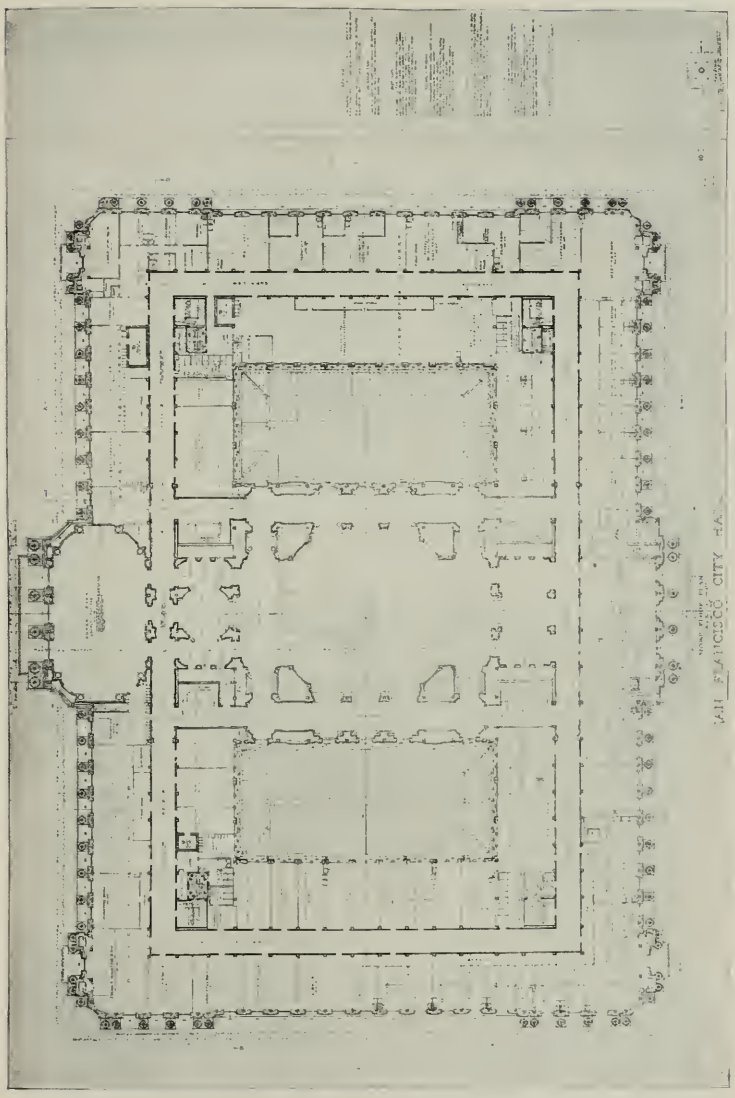

SAN FRANCISCO CITY HALL. SECOND FLOOR PLAN. "TYPICAL."
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SAN FRANCISCO CITY HALL, ELEVATOR LOBBY, FIRST FLOOR

SAN FRANCISCO CITY HALL, THE MAYOR'S OFFICE

SAN FRANCISCO CITY HALL, MAYOR'S LOBBY, SECOND FLOOR
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SAN FRANCISCO CITY HALL, FIRST FLOOR VESTIBULE
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SAN FRANCISCO CITY HALL, ROTUNDA GALLERY, THIRD FLOOR
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SAN FRANCISCO CITY HALL, EAST SIDE OF ROTUNDA
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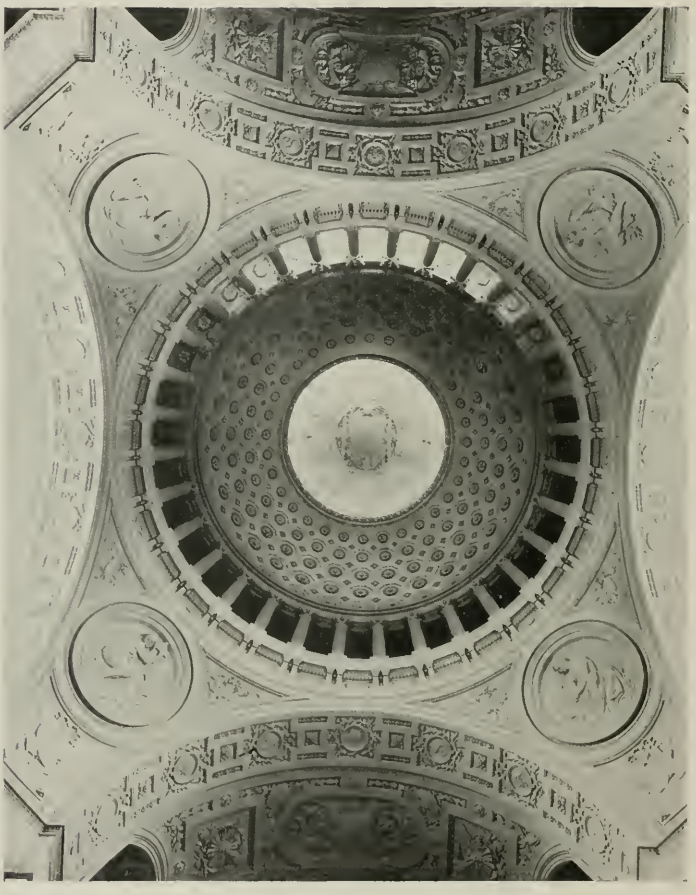

SAN FRANCISCO CITY HALL. DOME AND ARCHES OF ROTUNDA
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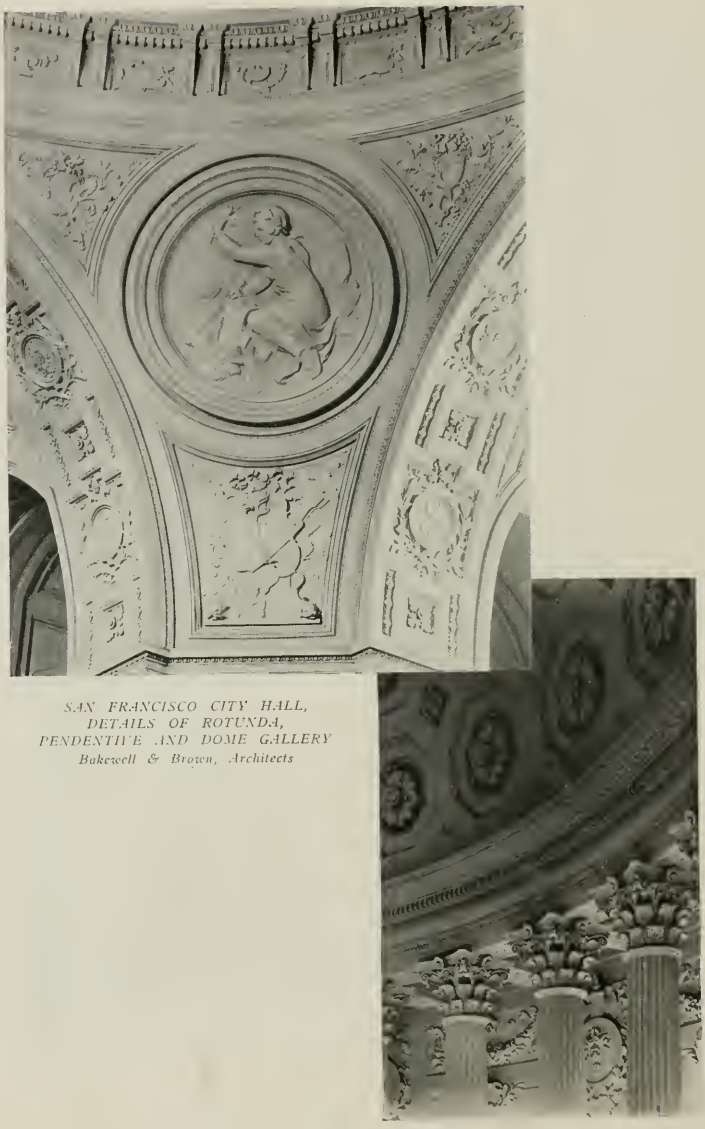

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DETAILS OF ROTUNDA,
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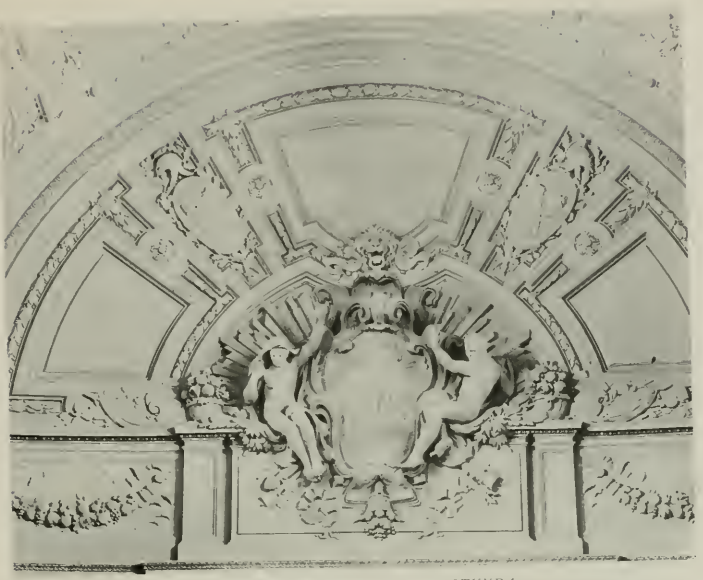

TYMPANUM, WEST WALL OF ROTUNDA

moved from their original beds. In the one case we have aggregations of men; in the other aggregates of materials. And since a nation cannot be moved in mass any more than can a quarry, we find that it is the loosened individuals, like the loosened rocks, that find their way across vast spaces to become the substance and fabric of a new and puissant nation. And whether these loose fragments are as fine as the marbles of Italy, as plastic in possibilities as the clay-made tiles of Spain, as serviceable as the sandstone of Paris or as hard as Scandinavian granite, they are all held to stable purpose in the political forms ready to receive them; they all help to harden the "mix"—they are bound in the cement of a common sentiment and the mass has been held from disruption and chastised to union by the steel rods of civil war.

If some of us have resented the familiar metaphor of the melting pot and what it implies, compensating thoughts will occur in substituting the more accurate trope of the mixing platform. Artificial stone, whether made from fragments of marble, brick, sandstone or granite—and we might add flint and basalt—has many qualities when mixed, set and reinforced no where obtainable in any one natural building material. And just as concrete is made from a formula for blend and binding, so in a sense is our citizenship, a matter of documents and oath. And just as we can exclude dirt and unhardened ingredients from the former by specification, so do we keep out dark-skinned and politically mushy immigrants from the latter by legislation.

Now with a blended nation made "slab and strong" from the nuggety boulders and age-worn pebbles and irreducible grit of the river beds and quarries of European humanity—clean, strong, tough material—we can safely predict the most enduring, the most energetic and the most cohesive community of all history—that is, if nothing serious has gone amiss in the mixing.

Now let us note in what particulars the architecture of such an admirable

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SAN FRANCISCO CITY HALL. LOOKING UP INTO FOURTH FLOOR GALLERY, ROTUNDA
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SAN FRANCISCO CITY HALL. ARCHES OF ROTUNDA
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SAN FRANCISCO CITY HALL, WINDOWS OF ROTUNDA
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SAN FRANCISCO CITY HALL, GALLERY OF ROTUNDA
BAKEWELL & BROWN, ARCHITECTS

albeit "artificial" nationality will differ from the architecture of the natural nations—the ethnic bedrock quarries of old Europe. There are several that occur to the mind at once. But we must separate the idea of architecture from mere building and we shall first note that concrete is common, cheap and universal—in a word, democratic—whereas marble, granite and sandstone are comparatively rare, expensive and aristocratic. Which leads us to realize that architecture is very much more diffused, enjoyed far more universally in America than in Europe. Immeasurably more people in America are born in better homes, go to better schools, work in better quarters, stop at better hotels, are amused in better theaters, are sick in better hospitals, put their money in better banks and are finally all buried in better tombs than is the case in Europe. This statement will not be accepted offhand because the rare conspicuous thing is so infinitely more apparent than what is common and all about us. The point would be much clearer, too, if one thought only of the contemporary architecture of Europe and ignored the historical holdovers accumulated from past ages. Finally, we put up more buildings and employ more architects and draughtsmen to plan them per hundred thousand inhabitants than is the case in Europe by a very large margin. Thus we see that American architecture is primarily and to a greater extent than anywhere else dedicated to practical uses and enjoyed by the common people as one might expect in a democracy typified by the most useful of building materials. And just as concrete does not lend itself well to exterior finish, we may note how to what very different ends architecture has been employed in the old lands of its origin. Original architecture as developed in marble, stone and granite was never utilitarian as it has become when these materials are triturated, transported and mixed in other places on another continent. You cannot name one of the masterpieces of old world architecture not wholly dedicated to an ideal, an inutile or a fantastic and vainglorious purpose. Anything but for the plain uses of the common man, because in those days no such person existed, except to be overawed with stupendous temples, placated in colossal amphitheaters or subdued by the moated strongholds of mighty overlords.

The remoteness of America from the sources of architectural origin and the fact that our community is built up from various sources, just as concrete aggregates may come from many quarries, accounts for the second characteristic common to American life and American architecture, and that is our tendency to an impartial outlook. Even before it was natural for us to be neutral by reason of our diverse origin, the father of our country clearly indicated the wisdom of political detachment. And in architecture we are free from entangling alliances with France, Spain, Italy or England. We of necessity, however, draw from all of them, and though we may lean this way or that, towards England in our home and college designing and because of an hereditary bias; towards France, because of her great school; towards Spain and Italy from sheer predeliction; in the main our trend is more and more eclectic, discriminating and selective. And already we have achieved a quite happy blend—an American composite style adapted from the fittest surviving features of all the variants of European Renaissance. And our general culture runs on the very same eclectic lines.

The third marked feature of the great transplanting from Europe to this continent resulting in the American nation is a strangely unaccountable, though absolutely unmistakable, tendency to refinement. Of course, this cannot be explained by noting that natural stone is used in large blocks while the ingredients of artificial stone are small and fine, even to the fineness of sand. But the fact bears out our analogy and is at least suggestive.

It is a universally admitted fact that the coarse, lumpish peasants of Europe when transplanted to this continent produce in the first generation slender, fine-drawn children. One can see this amazing thing in any common school in

San Francisco. But the refining of a nation's physique carries a like refining of their thoughts and actions, their manners, their art tastes and, of course, their intellectual output. John Burroughs long since pointed out this uniform tendency. He noted certain by-products of the mania for refinement in the craze for the white part of a loaf and the rejection of the crust and the coarse edges. About the same time a writer in the Century Magazine showed that American art, much to the surprise of European critics, did not express the big abysmal things of life, but skimmed lightly on the surface and rejoiced in the petty perfection of vignettes and cameos rather than in the power of vast canvasses and epic frescoes. While the poet Whitman deplores and rails against the tendency to seek after bijouterie and "delicatesse."

Just why American architecture, which we have seen to be before all things utilitarian and eclectic, should tend to refinement of detail more than any other national architecture, is partly answered by the national psychology noted above. But there may be other reasons.

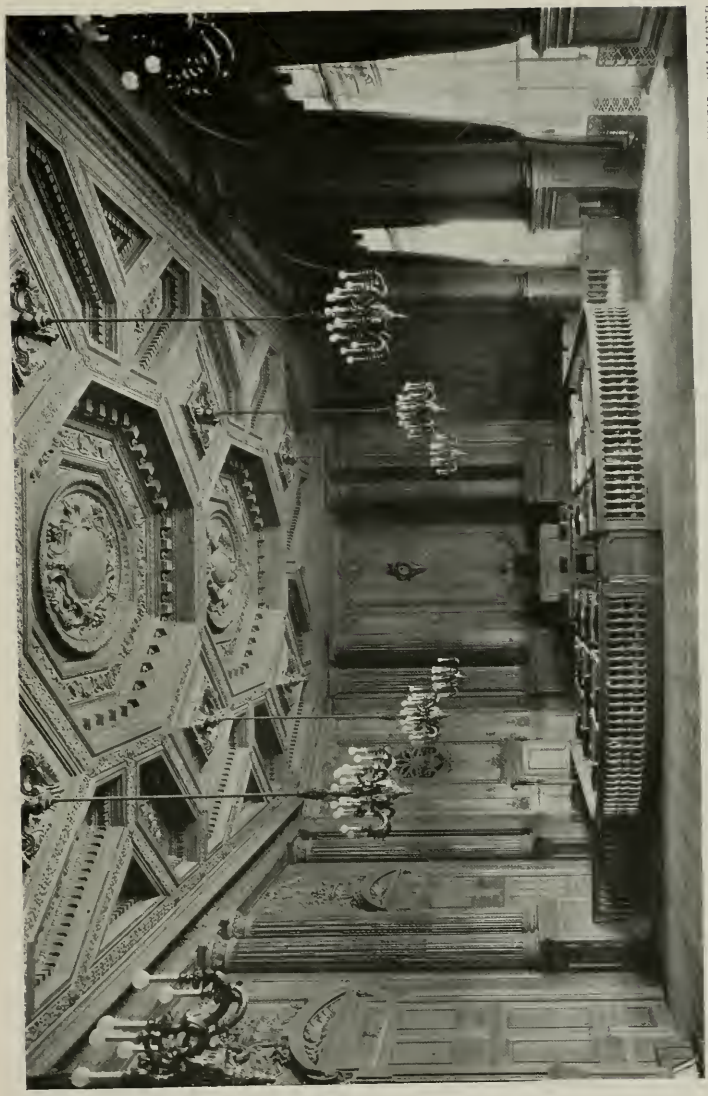
The building problems which mainly occupy our architects are as a rule rectangular and prismal. Our city streets are all square, a condition practically unknown in Europe. In consequence our urban architecture is verily, in the words of Emerson, "a builded geometry." But Emerson was speaking of Greek architecture, the square, simple forms of which demand by the law of compensation an intensive detail development in place of large articulation of form. And no architecture developed such simplicity of mass with such refinement of detail as the Greek.

This is self-evident. The old types of buildings, Basilicas, cathedrals, baths and theaters, were highly articulated in their form. The three dimensions were emphatic. And to this day all European buildings develop a similar tendency to articulation, like the Paris Grand Opera. But in America there is a necessity for designing not in three but in two dimensions. Most of our designs are façades so many feet wide, so many stories high. The depth, that is the third dimension, is reduced to such a minimum of window reveal and cornice projection as to be negligible. Even a corner building or an entire block with four fronts is, as we say, "four fronts"; that is, a façade repeated (as in the parlance of property definitions, but on vertical planes instead of lines) "at right angles until they meet at the point of commencement." In other words, our buildings are mostly conceived literally as one or more "elevations" in planes of two dimensions and not as perspectives of three.

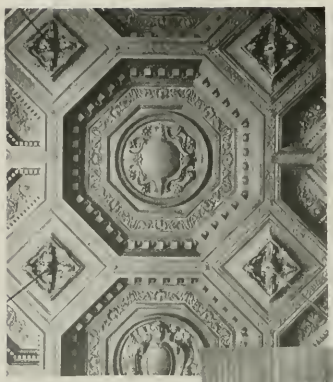
Now to create variety and interest in a plane, with stories of uniform height containing windows of uniform width and spacing is a difficult feat. We have in effect to affix a screen of architecture to a high blank wall carried on an even row of piers and punctured all over with rows of rectangular openings. To do this successfully calls for intensive design of a high order. Lacking strong and bold articulation, the interest must be developed in a far subtler sense of form, color and texture—all of which comes under the head of refinement.

Add to these conditions the fact that our most educated designers have been trained in a school where all architectural ideas are expressed in plane rather than in perspective, a decided fad of the French ateliers, and we have another reason to account for the facility of American architecture in refining the façade and a final explanation of our delicacy of detail.

In consequence of this it might be noted that in large public work wherever planes occur our efforts have the indigenous quality of American design, which we have seen to be utilitarian, eclectic and refined. But when in the same building it becomes necessary to introduce articulated features, such as a dome, a tower or a free pavilion, we are prone to revert to our origins and quarry our ideas from their European source. These features, being purely ornamental, are not so well provided for in the American scheme of thought and so we feel instinctively for a foreign solution. In other words, in our bold,



SAN FRANCISCO CITY HALL, COUNCIL CHAMBER
BAKEWELL & BROWN, ARCHITECTS



SAN FRANCISCO
CITY HALL

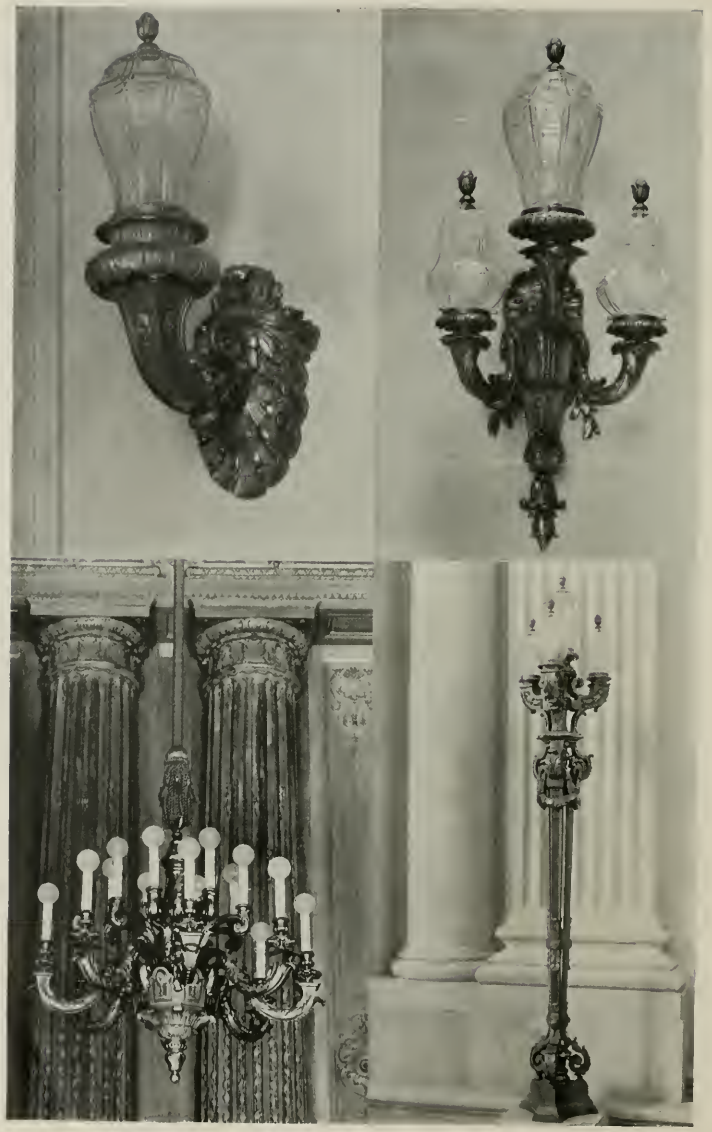
DETAILS
OF
COUNCIL
CHAMBER

Bakewell & Brown,
Architects

SAN FRANCISCO
CITY HALL

DOORS
OF
COUNCIL
CHAMBER

Bakewell & Brown,
Architects



SAN FRANCISCO CITY HALL, TYPICAL ELECTRIC FIXTURES
BAKEWELL & BROWN, ARCHITECTS

festive and occasional efforts, our churches, monumental theaters (those, I mean, that are not buried in a block), exposition buildings, capitols, millionaires' palaces and great monuments, we are less American, less a trituration and mix of foreign ingredients as we have symbolized in concrete and more a reversion and an atavism to our trans-Atlantic stone quarry origins.

* * *

The City Hall, architecturally considered, is very plainly divided into three parts. First, the interior working departments or municipal offices; second, the interior ceremonial or formal features typical of the pomp and circumstance of a great city; and third, the outer shell, which unites these two with appropriate dignity and magnificence.

At the time the bonds were voted to buy the land for the Civic Center and build the City Hall, eight and a half million dollars, five millions of which were needed for land, there was a large mass of public opinion clamorous for building what their protagonists called a "municipal office building." It was to be square and plain and well lighted—a business block; something quite different from the articulated, rambling, romantic old Hall of the past. This notion was enough in evidence to materially influence the programme for the competition, in which no specific mention is made of any requirements but practical ones. In writing of the successful plan of Messrs. Bakewell & Brown in the July, 1912, issue of this magazine, I made it clear that the winning design developed greater wisdom than was foreshadowed in the programme. But the investment idea at eight per cent net is so strong with us that but for the larger wisdom of our architects we might have been punished by really getting what we petitioned for. But the influence of the American Institute of Architects, the impending Exposition, the exalted atmosphere induced by the great idea of a veritable "urbs invicta," an unconquerable city, together with the particular needs of a dominating feature for the great Civic Center quadrilateral, so infinitely more majestic and dignified than the fussy triangle so hotly advocated at Van Ness and Market street, all these considerations combined to insure for us the architectural splendor of a towering dome as well as the desk space and meeting rooms, vaults and counters needed for our city government.

The working plans which in purpose "parti" and "pochet" are practically identical with the competition drawings, show very clearly how *Use* and *Beauty* have been provided for, the first with laborious minuteness and the second with inspiring magnificence. And it is a very remarkable and exceedingly intelligent feature of this design that the practical parts and the festive parts are entirely separate and distinct and yet so happily united that each is a help to the other.

The practical part is contained in a hollow rectangle about 300x400 feet in outer dimensions. The building is about 75 feet from street line to the line of the inner court, with a twelve-foot hallway running clear around the center. If we omit the dome entirely but assume the first floor central court covered over with a skylight, we have the City Hall in all its working parts absolutely complete, only lacking in the practical convenience of short cuts across the middle of the building from the Civic Center to the Van Ness avenue side.

Dealing with this building alone, the one urged by so many taxpayers, we shall note that all the interior details have been handled with the practical simplicity of a plain office building. There is no exception to this outside the Supervisors' Council Chamber. Even the court rooms on the top or attic floor are plain to the point of severity. And why not? Why beautify the walls of a court room, too soon to be saturated with the sordid tales of human frailty, the mean little wrangles incident to some one trying to "do" someone else? It is true we might aim at glorifying the walls in honor of Justice, but, as the lady is blind, what is the difference? However, as Justice needs to hear well, and the hard, plain walls give back sound and cause confusing reverberations, according to her representatives on the spot, it is suggested that curtains of pleated friar's cloth hung on the back walls of the offending court rooms would effectively absorb the echoes.

Now the wisdom of not attempting to impart ornament into the cornices and walls of all the parts of so large a building is obvious. The aggregate cost would be very great and the appreciable effect of such enrichment, thin and diluted as it needs be, would be hardly noticeable, whereas by concentrating all the beauty in one place where it tells, there is a double gain. A gain in lowered outlay and a gain in heightened effect.

As to the practical lay-out of the various departments, it is needless to indicate them. As we have often said in these pages, a firm of architects embodying the training, brains and purpose to develop a great design can be depended upon to solve all the plain practical problems with far more certainty than any man or group of men not so generously endowed. It is merely a matter of the will to work out the minutiæ. And a study of the plans reveals most painstaking evidence of close application to all technical problems and intimate co-operation with the departmental chiefs to solve them.

There are even good grounds for the assertion that the architects' conception of departmental efficiency transcends the development of the department itself. For instance, we are inclined to feel that there is clearer vision in the original plan of the

finance group, where the rating of property, its taxing and then its gathering in, its accounting, its auditing and its ultimate disbursement so clearly indicated in one open department on half the main floor of the first arrangement does not seem to be improved upon in the subdivided and sectional grouping of the final lay-out. Doubtless these departments had their way and felt justified. But how are we to know for certain but what the departments in question might have been graded up to the orderliness of the plan rather than the plan degraded to the lesser logic of the department?

It is hardly necessary, after the architectural triumphs of the Exposition and the Civic Center, to lay emphasis on the fact that we in San Francisco really do things in a lordly and a lavish way, and that we have a surpassing instinct for magnificence. San Francisco is not only a continental metropolis, it is a veritable world city. And that is why it was inevitable that the City Hall should be more, very much more, than a mere municipal office block. And this brings us to consider the second or festive part of the interior which stands quite by itself in more senses than one.

This superb feature is created by inserting a square center piece filling out the hollow rectangle from front to rear, but leaving sufficient light areas on each side. This square centerpiece, with galleries all around it tying it to the main building through its floors, runs clear up to the inner vaulting of the great dome. In effect, from inside this cupola rests on the intersection of two short transepts, forming in plan a cross. The north and south transepts contain galleries to serve each floor and great windows to light the interior. A monumental staircase leads straight to the Supervisors' Council Chamber directly in front of the Civic Center entrance. Opposite this and across the rotunda is the Mayor's office. These are the motifs magnificently framed in the east and west transept recesses, which are entirely open from the first floor up, whereas the side transepts which are merely cross corridors in plan are screened with the main "order" carried across in three bays (with an interpolated sub-order) to mask the floor levels and break up the light. Each of these transept recesses is spanned with four giant arches between which oblique pendentives merge into and carry the circular cornice which marks the base of the dome. The inner dome springs from a closely spaced ring of Corinthian columns and terminates in an open lantern through which the eye finally rests on a boldly carved cartouche at the apex of the panelled upper dome. While it is possible to give a verbal description of all the architectural details of this great composition, we are inclined to think that this makes dry reading and gives no clearer ideas to a layman than the black spots of musical notations do. The pictures will tell the tale. But it might be noted that the clever features in the larger composition of this design consist first in dropping the main gallery floor below the real floor reached by secondary flights of steps. This is the key to the admirable vertical proportion of the interior "pedestal" story and the high, animated "order" above it. The second admirable feature which gives organic composition to a square interior consists in apparently lengthening it on its important axis, which leads to the heart of the city government at one end and to the head of the city government at the other. This is done by omitting the screen of architecture which on the minor axis serves to narrow the composition just where narrowness is needed. This produces, moreover, the effect of length and variety from end to end, from low entrance to splendid steps and sumptuous chamber, whereas from side to side we get narrowness and symmetry thus exemplifying the primal law of the highest organic structure. This motive, it may be noted, is echoed in the oblong character of the topmost cartouche, which repeats in the ceiling the idea of a major and minor axis shown on the plan. A third point, showing sound judgment and artistic ingenuity, consists in the way that the main order of the rotunda is made to mask two stories in the interest of breadth and unity. Not only is there no horizontal line running anywhere through the fluted pilasters of this "order," but the floor levels in the side are indicated as separate and independent inserts—the very balusters ending at but not dying into the larger system. Moreover, the idea is still further emphasized by omitting any ornament or niche in the diagonal pylons which might break the clear lift of the corner, and by avoiding all horizontality in the details of the doors and openings at each end. The door heads are purposely shown at different heights, so as to baffle and break up any sense of continuous cross lines.

As might be expected, the dominant note in the wonderful wealth of ornament which enriches the whole of the great rotunda in refinement. The detail is remarkably well balanced in scale and replete with a profusion of novel and interesting motives that indicate an astonishing amount of study, invention and design. And yet nowhere does the detail seem overwrought. A delightful sense of richness, balanced with restraint, tempts us to restore to its rightful use for once that very much overdone yet exactly right word to express this balance, and that is "elegance." As to the style in the historic or period sense, the design is reminiscent of many rather than a record of one phase of the Renaissance. While in feeling it is French, in structure it suggests Italian origin. Some of the detail is Spanish and there is even an element of English practice in the panelling. On the whole its eclectic quality rightly entitles it to be called American, although in a sense there is less of the "I" square and more of the modeler's method of design than in most

cis-Atlantic creations which, of course, ranks it most nearly with modern French work. In its directness and clearness of design and in the reasonableness of its development it is a worthy exponent of the best traditions of that pre-eminently logical race.

No one can enter this glorious hall without exaltation of spirit. It is a tremendous credit to San Francisco and a triumph of permanent import to its creators and indeed the whole architectural profession because, compared with so much previous city work, it is so clearly the triumph of the profession at its best over politics at its worst.

We come finally to consider the exterior, which very frankly expresses the municipal office idea, but with far more generosity than its advocates ever dreamed of. This is obviously seen in the big rectangular mass of the main building, whose axis runs north and south. Across this runs the axis on which the ceremonial and festive idea is functioned, terminating in pedimented porticoes over the regal room of the city fathers at one end and the Mayor's reception suite at the other.

At the junction of these axes rises the mighty dome—the symbol of San Francisco's corporate existence and, to those who know and love our city, something more. . . .

Again we must note the refinement of these façades, the delicacy of the detail. There is an urbane and polished air about this cut granite, these fluted columns and these gilded balconies, which suggests, among other things, hospitality. And if the reader thinks that hospitality is incompatible with the purpose of a town hall, I beg to remind him that the word hospitality is etymologically the same as the word hotel, and that the French phrase "Hotel-de-Ville" is just about the same thing as our word City Hall.

The exterior design, viewed in detail, is full of charming surprises. Nowhere can one see common or stock ornaments. The statuary groups alone are worthy of special study. All through and in all parts there seems no faltering of purpose, no lapse into "the regular things," but everywhere a vivid expression of the high and unflagging zeal of a diligent and prolific creator.

Lastly we come to the dome. In spite of the dictum of the critics and the needs of unity in design and in spite of the fact that this particular dome grows naturally and organically from its basic building, there is something to be said in favor of the idea that a lofty dome is really largely independent of the building it is rooted in; just as the soul of man may soar above and be separated from his earthly body. I have many times seen the great dome of St. Paul's transfigured above the London haze—a thing by itself, spectral as a vision and cut off from the earth by wisps of vapor.

A soaring dome does not belong to the lower regions of the air, where common structures crowd the busy ways.

A great dome is a spiritual symbol, an aspiration, an idea; and its suggestions are wholly aloof from common things. It rules the upper air supreme and beautiful and is never to be rightly understood at too close quarters, however it may overwhelm the grosser senses.

The sheer beauty of the new City Hall dome transcends anything of the kind I have ever seen. Its proportions are perfect, its glistening granite lifts up like an apparition and the triumph and joy of its gilded finials as they gather in the glory of the sun to the final pinnacle of flame stirs the senses as do chords of music and moves the soul like beacon flashes that proclaim some mighty victory!

* * *

The San Francisco City Hall

"Thou drawest all things small or great
To thee, beside the Western Gate."—Bret Harte.

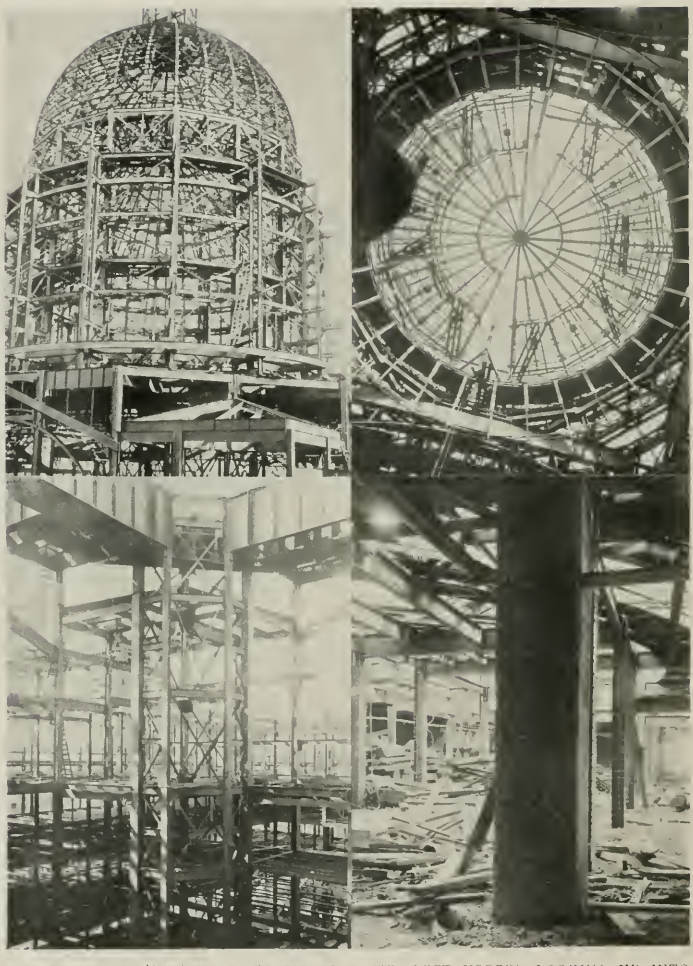
THE new City Hall of San Francisco at last looms up all but complete, and one can now speak of its architecture with that confidence that comes only from seeing the thing itself.

We now know that it lacks none of the majesty and dignity of its famous foreign predecessors, and that it possesses many features which stamp it as unique among domed buildings.

The splendor of its rich façade, its impressive proportions, its majestic dome, and the radiance of its gilded spire produce an ensemble that make it the most sumptuous city hall in our country.

When the last echo of the chisel has resounded through its spacious corridors, and the toilers have reluctantly departed, they will leave behind them an immortal monument to the architects whose chef-d'œuvre shall be the joy and pride of city and state and nation for generations to come.

J. C. BRANNER,
Stanford University.



SAN FRANCISCO CITY HALL, FRAME OF DOME (LEFT UPPER), LOOKING UP INTO DOME (RIGHT UPPER), CORNER PIER OF ROTUNDA (LEFT LOWER), TYPICAL FIREPROOFING COLUMNS (RIGHT LOWER)

Some of the Engineering Features of the San Francisco City Hall

By C. H. SNYDER, C. E.

IN preparing the engineering designs for the San Francisco City Hall an effort was made to carry out the construction on the lines of a modern office building as far as the architecture would permit. Aside from the dome, which was a considerable problem, and the heavy stone work of the exterior walls and cornices, the steel work and foundations were similar to the ordinary Class A building.

Borings made at the site showed a sand formation, extending to a depth of about 100 feet, varying somewhat in fineness but of good character. The water level was below the basement floor.

In order to have the conditions the same throughout the building, the bottoms of the footing were all placed at the same approximate distance below the basement floor.

Only what may be called the permanent live load was included with the dead in designing the footings, the soil pressure being taken low so that if sixty per cent of the live had been carried to the footings the soil pressure would not have exceeded the amount provided for in the ordinance. By this means the actual pressure on the soil under all columns is practically uniform.

Grillages of steel beams and girders were used under columns near elevator pits and under the groups of columns at the corners of the rotunda supporting the dome construction, both to get a proper distribution of load on the soil and to prevent an excessive depth of footing. The isolated columns were provided with plain concrete piers of pyramidal shape made of 1-2-1/2-5 rock concrete.

In general, cast iron bases were used, except under the dome columns, where steel slabs, planed both sides, were used.

About 8,000 tons of structural steel were used in the construction of the building. Three-quarters of this tonnage was for the floors and roof, of the conventional type of skeleton construction, and does not require much comment. The total floor load was 220 pounds for the first floor and 200 pounds for the typical floors. The typical floor beam was 20-inch—65 lbs., about 28 feet long, of which there were about 2,000 tons.

The dome is supported on four groups of five columns each, latticed together from the second floor to the top. These in turn carry four fifty-ton girders and four twenty-ton girders, 9 feet deep and about 60 feet long, supporting the dome structure, and the deck adjacent. One inch diameter rivets were used in these girders.

The dome and tower supporting it was divided into sixteen bays, and there were four circles of columns in the tower (seventy feet from top of main girders to spring of dome) on the sixteen radial lines. This tower was braced radially and circumferentially, like a gas holder frame, with five levels of horizontal bracing to maintain the circular shape against distortion.

Two sets of radial trusses form the dome structure, the inner set at the upper ceiling level and the outer set forming the exterior shell of the dome. The kick of both sets of trusses was taken by a tension ring at the spring line.

Jack trusses were used in the outer shell to break up the spans, and the surface covered with T's to support book tiles.

A wind load of 50 pounds per square foot, reduced for curvature and slope, was used in calculating the dome structure. The trusses themselves were de-

signed as three-hinged arches. The total wind shear from the dome was carried down the four groups of five columns each supporting the main girders, and one-third of this shear was distributed to each of the second, third and fourth floors; diagonal horizontal bracing being placed in each of these floors near the dome supporting towers to insure the proper distribution. No wind was figured on the main structure, nor was any diagonal bracing used below the second floor, in order that the necessary flexibility against earthquakes should be retained.

Structural steel work painted one shop coat of red lead, but the field coat of red lead and graphite was applied only to the parts not encased in concrete.

Material open-hearth steel was used throughout, and was inspected at shop and mill before shipment.

The exterior of the building is of California granite backed with brick, and the interior of Bedford sandstone backed with tile; in fact, all interior stone work, including marble wainscoting, is backed with terra cotta for stability. Above the stone work of the rotunda the finish is plaster supported on a structural steel frame work. All arches, etc., in the dome structure are outlined in structural steel to which the furring and wire lath are applied.

The fireproofing of the steel and the floor slabs is of brick concrete, the brick being secured from the foundations of the old City Hall. This construction not only gave lightness as compared with rock concrete, but, as the material was at hand and had to be removed, cheapness also. The typical rough slabs are four inches thick, reinforced with Clinton wire mesh 4x12—3/8. Span 6 ft. 6 in. center to center of 20 in. beams. Concrete mixed in the proportion of 1-2-4, the broken brick being crusher run. Accompanying photograph gives the appearance of the brick concrete fireproofing.

A few statistics may be interesting:

Diameter of dome at spring line, 86 feet.
Highest point of steel, 299 feet above ground.
Top of dome ribs, 233 feet above ground.
Spring of dome, 191 feet above ground.
Top of main dome girders, 116 feet above ground.
Approximate weight of building, 90,000 tons.
Maximum column section, 600 pounds per foot.
Total weight of steel, 7,900 tons.
Cost of structural steel in place, $561,000.
Weight of structural steel per enclosed cubic foot, 1.54 pounds.

There are 460 steel columns in the main building and 80 steel columns in the dome structure that are carried on the eight 9-foot girders to the four towers of five columns each.

The Call building could be set within the dome, but would project through the top about 35 feet.

* * *

Two Large San Francisco Buildings

Among the important announcements of new building projects in San Francisco this month are a three-story and basement reinforced concrete building to be erected on Mission street for the Newman Furniture Company from plans by Smith O'Brien, architect, and a four-story Class C warehouse and manufacturing plant at Harrison and Second streets, San Francisco, for the United States Envelope Company, from plans by William H. Crim, Jr. The two structures will represent a total outlay of approximately $250,000. Plans for both buildings will be completed at once and construction will be started within thirty days.

TELEPHONE SWITCHBOARD IN THE SAN FRANCISCO CITY HALL

Telephone Equipment of the San Francisco City Hall

WITH the creation of the Civic Center the necessity of a central telephone system made itself felt and to meet this situation the Pacific Telephone and Telegraph Company developed various plans which finally resulted in placing in the telephone room of the new City Hall a switchboard similar to the type used in the company's large central offices. This board stands six feet eight inches high and is twenty feet long and has a capacity for 1500 lines with eight operating positions. The board is completely multipled, an arrangement by which each operator may secure any called number. It is equipped with eighty trunk lines to the central office, these being provided with busy signals which obviate the necessity of the operators having to listen on the line for the busy signal or the possibility of going in on a busy line. An auxiliary board with seventeen lines and seventeen locals from the main PBX has been provided for the Judicial Department. This was found necessary in order to allow the secretary to receive calls for the judges and the court attachés during the time the courts are in session and to guard against interruption of the court. After regular hours these lines are plugged through to the main PBX, where the calls will be handled in the regular way. Through this private exchange the greater part of the city's business in the Civic Center will be handled. Lines have been placed to the Auditorium, Library, Opera House, and the four smaller buildings.

In addition to the Civic Center PBX, provision has been made for twenty-eight regular telephones for officials, forty for private use, such as

the press, title searchers, etc.; twenty lines for public telephones, and thirty lines have been arranged for temporary use during election time. All these lines are run direct to central office and have no connection with the private exchange.

The telephone suite comprises three rooms: The operating room, in which is located the main switchboard and the chief operator's desk; the rest room, adjoining, and the cable room, containing the main distributing frame and the power plant. In this room terminates the 600-pair cable from central office and all the various lines throughout the City Hall and Civic Center. The main frame has a capacity of 1800 lines and serves as a connecting link between the inside and outside construction. In the new City Hall there were placed over thirty miles of conduit with 5800 outlets for electric light and telephone wires, and eighty-five miles of wire was placed in these conduits. In addition to the power lines from central office there has been installed an auxiliary battery to provide sufficient power to care for the board under any emergencies. This battery may be charged either from the central office or by the local power plant.

Some idea may be gained of the telephone development when we look back over the early pages of the city's history. The first authentic record we have of any of the city's telephones is in the directory of the American Speaking Telephone Company, dated June 1, 1878. The City and County of San Francisco then had but two telephones, one located in the secretary's office and the other in the office of the Chief of Police. Opposite these two names was placed an asterisk, which indicated that these subscribers were connected with the central office system and could be switched into private conversation with each other. At that time the City Hall was located on Kearny street opposite Portsmouth Square. It may be truly said that this was the first of San Francisco's civic centers, for around it were grouped many notable buildings, and much of the early history of the city was connected with this spot.

This early telephone equipment consisted of an egg-shaped arrangement which was used both as a transmitter and a receiver, it being necessary to talk into it first and then hurriedly place it to the ear to hear the reply. The bell was very much like a large electric doorbell and was rung by pushing a button. The wires from the subscribers' premises were at that time strung over the housetops along Kearny street to the exchange, then located in Pine street.

At the central office the equipment was similar to that on the subscribers' premises, particularly the bells. As the popularity of the telephone grew, so did the number of bells and also the worry of the operator, until one day he found that he was no longer able to distinguish which bell was rung, there being so many of the same tone. The matter was referred to the engineers for a solution of the problem and after a consultation of that august body, a recommendation was made that pieces of twine be tied to the tappers of the bells and these would naturally shake when the bell was rung and the operator could then locate the calling subscriber's number. The operating force, of which there was but one, a boy, in addition to looking after the entire operating of the company's telephone business, had to make out all the tickets for bills, which occupied equally as much of his time as did his operating duties. Thus began the early telephone system of San Francisco in 1878. Along in the eighties the housetops resembled a wire net and arrangements were then made to remove these wires and place them on poles. The company was granted permis-

sion to place the poles in the streets, in consideration for which a number of telephones were granted to the city gratis. Up to this time the city paid for all its telephones. The poles soon became congested and aerial cable was substituted for the open wire, with the ultimate result of the present underground system.

They tell many amusing stories concerning the early telephone situation. Big Jim, a Chinaman, who used to furnish laborers for some of the prominent politicians, having heard that it was possible to talk to Sacramento, called at the telephone office and requested that he be allowed to talk with a Chinaman at that point. After getting both on the line they struggled along as best they could in pidgin English until it came to a point where one of the Chinamen wanted to know how many laborers he should send up. The Chinaman in Sacramento turned to his countryman and asked him a question in Chinese, which was also replied to in Chinese. The Chinaman here in the city having heard the conversation in Sacramento dropped the receiver and threw his hands up in the air, exclaiming, "Gee Chli, telephone can talky China." After that "China" was used exclusively.

All this may seem very crude when compared with the equipment and conditions that existed even as early as 1906. The city at that time had an eighty-line switchboard with ten trunks and eighty-five stations. This board was located on the Larkin street side of what was then known as the "New City Hall." When this board was installed, conduits as well as the steam radiator were unheard of and the heating system in the City Hall consisted of huge tunnels leading from the basement to various rooms. In these tunnels were laid the telephone wires to guard against dampness. While the idea of placing these wires in the tunnels may have been good from some points of view, some of our "trouble" men seemed to feel a slight difference of opinion, particularly upon entering one of these infernos.

Up to the fire of 1906 the municipal officials, clerks, etc., were housed in the New City Hall. With the destruction of the building in that year came the separating of the various departments, each seeking its own location and making its own telephone arrangement, which ultimately resulted in all the large departments having their own private branch exchanges. The completion of the City Hall in the Civic Center has brought about a reunion of the municipal family to a considerable extent.

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Heating and Ventilating Plant of San Francisco City Hall

By WM. E. LELAND, S. B.*

THE heating and ventilating apparatus has been designed as a combination system with direct radiation supplying all the heat required for the entire building with an additional mechanical system of ventilation for the entire first floor and basement and for all court rooms.

The heating is accomplished by direct radiators located in each room and supplied with steam from the municipal power plant for the Civic Center. The piping system is arranged for the circulation of steam by the mechanical vacuum system, with vacuum pumps located in one of the fan rooms in the basement. The piping is arranged on the overhead system, with down feed risers and return mains in the basement.

*Of Leland & Haley, consulting mechanical engineers, 58 Sutter street, San Francisco.

All of the direct radiators in the principal rooms are automatically controlled by thermostats, so the room temperature is maintained at a constant point without attention.

The ventilating apparatus for the first and basement floors consists of two fresh air supply fans, each designed to deliver 43,000 cubic feet of air per minute, together with two exhaust fans of about the same capacity, each pair of fans serving half of the space in these two floors.

The fresh air is brought down from the roof through two large air shafts at the side of the central dome and passes through air washers and heating stacks in the fan rooms in the basement, where it is thoroughly cleaned and moistened and heated to a temperature of about 75 degrees. This temperature is automatically regulated by a thermostat in the main duct. From the fans the air is distributed to the various rooms through galvanized iron ducts on the basement ceiling.

The exhaust air is similarly collected from the rooms and is drawn out by the two exhaust fans and discharged to the roof through two large exhaust shafts similar to the fresh air shafts.

The court rooms on the two upper floors and the Supervisors' chamber and a few important rooms on the second floor are similarly ventilated by four fresh air supply fans located in the attic. Each of these fans supplies one-quarter of the building and is designed to handle an average of 20,000 cubic feet of air per minute.

This air is drawn in from the roof as in the case of the basement fans and is passed over air washers and heating stacks and heated to a temperature of approximately 75 degrees and is discharged to the rooms through a system of ducts and flues.

For all of these rooms in the upper stories vent flues have been provided running to the attic space, which in turn is vented to the outside air by screens set all around the inner court walls.

The toilets are arranged in tiers in each corner of the building and each tier is provided with an exhaust fan with flues connecting to each toilet. This exhaust ventilation is also extended to all the smaller toilets throughout the building that have no direct outside ventilation.

The four toilet exhaust fans are designed to handle from 4,500 to 8,500 cubic feet of air per minute each, depending on the number of toilets on the system.

A small individual exhaust fan has been provided for the chemical laboratory in the basement and a similar small exhaust fan for the blueprint department in the attic.

The apparatus as a whole provides for the supply of approximately 19,800 square feet of direct steam radiation, 5,376 square feet of indirect Vento radiation in connection with the fresh air supply, a total fresh air supply of 166,000 cubic feet per minute, a total mechanical exhaust of 112,000 cubic feet per minute and approximately 830 gallons of circulating water per minute for the air washers.

* * *

Architectural Club Exhibit

The date for the first annual exhibition of the Alameda County Architectural Club has been changed from the latter part of September to October 2-10, at the Municipal Auditorium. The work of San Francisco architects will be shown, as well as the work of Oakland and Berkeley architects.

The Contractors Who Built the San Francisco City Hall

Excavating and Grading—Contra Costa Construction Co.
Furnishing and Fabricating Structural Steel and Iron—U. S. Steel Products Co.
Crushing Brick and Stone, etc.—Williams & Finnegan.
Foundation and Footing Concrete Work and Finishing Grading—Sound Construction and Engineering Co.
Erection of Structural Steel and Cast Iron—Blume Contracting Co.
Granite Work—McGilvray-Raymond Granite Co.
Architectural Terra Cotta and Masonry—Brandon & Lawson.
Carving and Finishing Granite Work for two large Pediments—McGilvray-Raymond Granite Co.
Concrete Work, Reinforced Concrete and Fireproofing—Clinton Fireproofing Co. of California.
Furnishing and Delivering Crushed Brick—Enrico Biggis.
Brick and Terra Cotta Facing on two Large Courts—Brandon & Lawson.
Plumbing Work—Alex. Coleman.
Heating and Ventilating—Robert Dalziel, Jr.
Electric Wiring, Vacuum Cleaning, Pneumatic Tube System—Newbery-Bendheim Electric Co.
Water Supply System—Scott Co.
Marble Work—Jos. Musto Sons-Keenan Co.
Plastering Work—C. C. Morehouse.
Metal Furring, Partition Work, Lathing—Cornelius Collins.
Marble Bases, Stairs and Steps—Mission Marble Works.
Interior Stone Work—McGilvray Stone Co.
Carpentry, Millwork, etc.—Monson Bros.
Sheet Metal, Roofing and Skylights, Sec. B, Prop. 2—U. S. Metal Products Co.
Composition Plaster Ornament Work—Paul E. Denneville.
Sheet Metal, Roofing and Skylights, Sec. A, Prop. 1—Paraffine Paint Co.
Sheet Metal Covering of Dome and Lantern—Forderer Cornice Works.
Electric Elevators, Hydraulic Lift, etc.—Otis Elevator Co.
Ornamental and Miscellaneous Iron and Bronze Work—Rudgear-Merle Co.
Glass and Glazing—W. P. Fuller Co.
Hardware—P. A. Smith Co.
Painting—D. Zelinsky & Sons, Inc.
Special Stationary Furniture, Prop. 3—L. & E. Emanuel, Inc.
Glass and Glazing—Cal. Plate & Window Glass Co.
Special Stationary Furniture—
Prop. 1—R. Brandlein & Co.
Prop. 2—R. Brandlein & Co.
Vault Work — Herring - Hall Marvin Safe Co.
Lighting Fixtures—Leo J. Meyberg.
Special Stationary Furniture—Capitol Sheet Metal Works.
Window Shades—W. & J. Sloane.
Electric Clock System—Albert S. Samuels.
Mail Chutes System—American Mailing Device Corp.
Special Furniture—
Supervisors' Chambers—W. & J. Sloane.
Judges Superior Court, Prop. 2—Mullen Mfg. Co.
Tax Collector, Prop. 1—L. & E. Emanuel, Inc.
Registration Department—Jas. B. McSheehy.
Additional, Registration Dept.—Mullen Mfg. Co.
Draperies for Council Chambers, Mayor's Office and Reception Rooms—W. & J. Sloane.
Lettering Doors, Signs, Walls, etc.—Jas. Laib, Jr.
Sidewalks and Driveways—J. F. Dowling.
Special Public Furniture, Council Chambers—L. & E. Emanuel.

Are Architects Too Conservative?

By CHARLES F. MAUER

AT the general invitation of the editor of this publication, I shall endeavor to quote a salesman's viewpoint on this very important subject.

"Are architects too conservative?" To be conservative is an asset—a desirable characteristic for any professional or business man to possess; but for any professional or business man to hold himself aloof from personal interviews with those bearing the title of "commercial salesmen," who are internationally known and recognized as the greatest promoters of the world's progress and modern improvements, is not conservatism but lack of knowledge of the real mission of a salesman.

I will grant that there are some species of men posing as salesmen who will stoop to the most degrading tactics of misrepresentation, who have absolutely no regard for any man's time or privileges, who are totally ignorant of the practical uses and merits of their own products. Also, there are men who pose as architects who are not competent to properly design and superintend the construction of any buildings, simply because they do not possess the technical training, practical knowledge and experience. So it is with every other profession or business. The statutes do not prohibit any man from following any vocation he may choose, be he practically adapted for that particular line of work or not.

The architect, the same as many other professional men, has nothing to sell but his knowledge and services. To make his services valuable and appreciated, he must know the needs of his clients, and produce them intelligently, that the cost may not be excessive; he must keep up with the continual progress of the world, so that his sales may continue. If he has any other method or system whereby he can judge and criticise the merits or demerits of any material, device or method so effectively and intelligently as through personal contact and interview with the men who understand the use of them, it is a well-guarded secret of his profession, as no business man claims to possess this superior knowledge.

Suppose some practical mechanic has spent from three to five years of his time in perfecting some new device or method to be used exclusively in the construction of buildings, which is a decided improvement over any other device or method used for a similar purpose; or that a chemist has evolved a new building material which he has given a thorough, practical time test, and that he positively knows his product is an improvement over any other similar product specified and used by the architects for the same purpose. Both men know that, in order to obtain recognition of the merits of their products, they must obtain the approval and recommendations of the architects. How can they do it without personal solicitation? To introduce any new product through "printer's ink" alone is almost an impossibility, even though finances are unlimited, which is very rarely the case. Ordinarily the man who evolves new products or new methods has no financial means for introducing them on the market; neither is he adapted to solicit the patronage of the dealer or professional man—hence the necessity of the salesman.

It is true that a great many "gold bricks" have been sold by promoters of various kinds—sometimes intentionally and frequently conscientiously, owing to lack of proper knowledge. This deplorable condition does not apply alone to the salesman who sells materials and methods, but includes every business and profession, the architect not excepted; no professional

man can be a success unless he is a salesman; his work is not complete or profitable until a sale is made.

Let any architect examine his past record and achievements, and he will readily detect where at some time or another his client was put to considerable unnecessary trouble and expense, in order to overcome defects in the construction of his building that could and would have been avoided by the architect had he devoted a little more of his time to interviewing "salesmen" in order to become thoroughly posted as to the merits and practical results of various materials and methods adaptable for overcoming that particular defect.

The writer, while not a traveling salesman at this time, has served successfully in that capacity, and previously served as buyer in both retail and wholesale mercantile establishments. It has always been his set rule to grant every salesman an interview, to hear his story, to see what he had. If he had something new and better than any other similar products, I would consider myself under obligations to him for demonstrating the merits of his products; if they were not as good or better than old standard brands, they were not considered. The knowledge gained by these interviews is amazingly large and enables one to become qualified to select the wheat from the chaff, to become thoroughly conversant with the various products on the market in any line of business, and to know their merits and their weaknesses.

So it is with the architect. If he will systematize his business so that he can shift the minor details and responsibilities to the shoulders of his subordinates, he will find more spare time to devote to his clients and their interests, which can be safeguarded at any and all times only by keeping abreast with the progress of the world; to do this, without granting the "commercial salesman" who solicits his business an interview, is a physical impossibility for any professional or business man.

Suppose a salesman interviews a property owner who contemplates erecting a business block. The salesman has a material or method practically unknown in this particular locality, yet far superior to any material or method specified and used by local architects. The property owner is very much interested in any material or method that will prolong the life of his building, better the conveniences of his tenants, and increase the value of his property, by obtaining more efficiency for the same or perhaps less outlay of money than the customary methods employed. He investigates the salesman's proposition thoroughly, examines his recommendations, and requests a practical demonstration of his products, which is readily granted by the salesman. The property owner, who frequently is a practical man, is thoroughly convinced that the material or method in question is superior to that customarily used and would prefer to have it specified in the construction of his building, but it must have the approval of his architect. Mr. Salesman learns who the architect is, gets a little advance information as to his likes and dislikes, his vanities and potentialities, presents his card to the architect for a personal interview, which, if granted at all, must necessarily be very brief. He immediately dives into his subject and calls attention to his interview with the architect's client, emphasizing the fact that the owner would like to have his material specified and used in his new building. This closes the interview between salesman and architect.

The architect has no time to investigate the merits of the salesman's product, yet he assumes the position of advising his client intelligently as to what materials and methods are best adapted and are the most practical

and efficient in the construction of his building. Should his client, the property owner, consult him in reference to the salesman's product, he has no knowledge of the product, and therefore cannot and will not specify it, as he has no precedence. Does the architect's lack of knowledge of this particular product make it worthless or inefficient? Does the architect serve his client to the best interest of the latter? Who suffers most—the architect, the client, or the salesman—through the refusal of the architect to grant the salesman a thorough interview? The majority of commercial salesmen are paid a salary, and are not dependent upon any particular sale for a living. But can the architect afford to jeopardize his standing in his own community and gain the ill will of his client (who pays the bill) by holding himself aloof from a personal interview with the salesman?

This is a day of progress; new materials and new methods are evolved daily. What was good yesterday is antique today. Prejudice and precedent must be discarded. The architect has no more grounds for branding every salesman a "gold brick artist" than the salesman has for branding every architect an egotistical, opinionated human being, whose every movement and act is guided by precedent and prejudices, non-susceptible to personal interviews or open-mindedness.

An actual experience which transpired between a property owner, architect and commercial salesman demonstrates very forcibly the writer's viewpoint of the indifference of architects towards commercial salesmen. The property owner was the possessor of a "Class A" building, completed about one year. Defects had developed in the building, causing interior damage to the extent of a couple thousand dollars, besides the necessary expense required to put the exterior of the building in proper shape. The salesman was called in by the property owner to assist in solving the problem of properly repairing the building. After the first interview, an appointment was made to meet the architect on the premises at a specified time. In brief, here is the conversation between architect and his client after the salesman had thoroughly explained his material and method:

CLIENT TO ARCHITECT—"In your opinion, this man's material and method will give me permanent relief."

ARCHITECT—"Yes, I would recommend letting his firm do the work."

CLIENT—"How do you know it will do the work?"

ARCHITECT—"Since your trouble came up, I have investigated the different materials and methods and find this one the best."

CLIENT TO SALESMAN—"How long has your material and method been in use in this city?"

SALESMAN—"For over five years."

CLIENT TO ARCHITECT—"Why did you not specify this man's material and method in the construction of my building?"

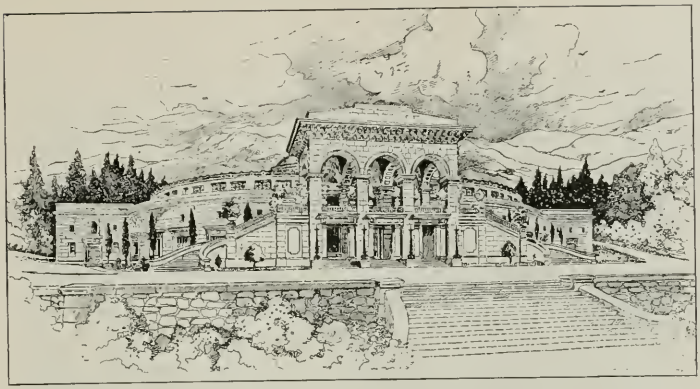
ARCHITECT—"I did not know anything about this man's material and method."

CLIENT TO SALESMAN—"Do you or does anyone from your firm call on the architects?"

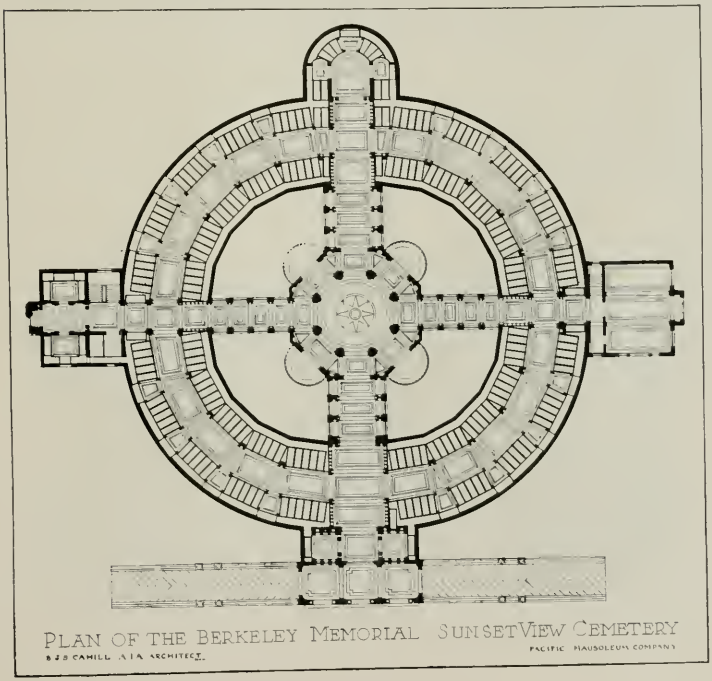
SALESMAN—"It is part of my personal duties to call on the architects at frequent intervals, but I seldom get an audience; they are always 'too busy.'"

CLIENT TO ARCHITECT—"Instruct this man to proceed with his work. From this time on I shall employ an architect who has enough time to familiarize himself with all the latest improved methods and materials for construction."

Thus, in the final analysis, the writer's conclusion is simply this: Every architect, to be successful, must be a salesman. To be a successful salesman, continual training and increasing knowledge is required in order to "keep ahead." He owes it to himself and to his clients to take advantage of every practical means of broadening his knowledge and strengthening his professional equipment, and he will find that personal intercourse with the "commercial salesman" is one of the simplest, most direct and most valuable means of doing this.



PERSPECTIVE BERKELEY MEMORIAL, SUNSET VIEW CEMETERY, BERKELEY
B. J. S. Cahill, Architect



WILLIS POLK'S MEMORY DESIGN OF THE SOUTHERN PACIFIC OFFICE BUILDING, SAN FRANCISCO

OFFICE BUILDING FOR THE SOUTHERN PACIFIC COMPANY, SAN FRANCISCO
Bliss & Faville, Architects

Willis Polk Puts One Over on Bliss & Faville

From Town Talk.

WE all know how secretive the Southern Pacific has been about its new building on lower Market street. For a long time the corporation denied that it contemplated building, and even when the formal announcement was made that the structure was to be erected there was great secrecy concerning the plans. A few days ago the Chronicle published an architect's drawing of the building. When they saw this picture in the Chronicle Bliss & Faville, the architects for the Southern Pacific structure, probably wondered where the drawing came from. They knew that it did not come from their office. Let me enlighten them. One day "Bill" Levings, the city editor of the Chronicle, said to Charlie Horne, a member of his staff:

"Charlie, there's not much doing. Suppose you go out and try to get the architect's drawings of the new Southern Pacific building."

"All right, Bill," said Horne. "I'm afraid the thing is out of the question, but I'll try."

Horne went out, ran into Willis Polk and told him of the hopeless quest.

"Let's go over to Bliss & Faville's office," said Willis.

"It won't do any good," said Horne. "They've refused time and again to give up those plans."

They went nevertheless. Polk introduced Horne to Faville, and the three had a pleasant chat. Finally Horne brought up the subject of the plans. Could he have an architect's drawing for publication in the Chronicle? As he expected, he could not.

"Let's see the drawings," said Polk. "I'm interested to know how you've treated the problem.

There was no objection to that, and Faville brought out the drawings. Polk studied them a long time, criticising this detail, commending that, inquiring about everything. Meanwhile Horne used every means known to a reporter to induce Faville to lend him one of the drawings. But Faville was adamant; he had his instructions and must abide by them. Finally Polk and Horne left.

"I told you it wouldn't do any good," said Horne.

"Come to my office," said Polk.

Arrived at his office, Polk led the way to the draughting room, shed his coat and in a very short time had sketched an exact reproduction of the front elevation of the building. All the time he had been studying the drawings in Faville's office he had been drawing this plan in his mind. It was Polk's memory picture of the plan which appeared in the Chronicle next day.

* * *

What Are the Ingredients of Concrete?

In my travels as an efficiency engineer, says a contributor to Engineering-Contracting, I come in contact with many civil service commissions, and in reading over examination papers for concrete foreman in a Middle West city I came to this question:

"What are the ingredients of concrete?"

A colored gentleman who was an aspirant for the position replied to the question as follows:

"In concrete you can use miles and miles of stone and sand, so long as you use plenty of ce-ment."

Popular Ignorance Regarding the Profession of Architecture

THE professions suffer from one very serious handicap which is not felt so severely by business men, namely, the inability of their members to definitely show their wares in a way which the public can understand. The selection of all professional men is apt to be haphazard; people go to a doctor because he is on the next block, or because he is reported to have a lovely bedside manner, or perhaps because he is reported by people incapable of judging his qualifications, to be skillful in his profession.

The case of the lawyer is not very different; he is generally selected because he is a friend of John Jones, "who was in the same fraternity with me at college," or for some reason equally good. Possibly the selection may be made because the person needing a lawyer has heard that some attorney has won a great number of cases, and he goes to that attorney without knowing how strong the cases were to begin with. Yet such a selection, which is probably based on the slightest possible evidence, is better than one which is made for personal reasons.

The selection of an architect is, as a rule, the result of a still wider guess than those which people make about their lawyers and their physicians. A great many people do not know what an architect is for. They have an idea that they have to engage one to build a house, or a commercial building, but just why, they do not know, and are very apt to look upon an architect as a necessary evil attendant upon house building, as measles is upon childhood. Most people know that an architect makes drawings; some people know that he superintends the job, but very few people know that he assumes no financial responsibility for the cost of the building or that he does not guarantee the building to be satisfactory. And when these things are explained to the average intending client he wonders what the architect does do for his money.

The selection of an architect is generally due to one of several reasons: first, because he is a neighbor; second, because he is not the architect who is a neighbor; third, because of some pressure of acquaintance or financial interest which may be brought to bear to secure his appointment; fourth, last and least, because the architect is qualified to execute the work. It is for an increase in the percentage of cases in which the last reason is the compelling one that architects most do pray. The first two classes offer a fair field to everybody; we all have neighbors, and we have even more people who are not neighbors, but nobody likes to be employed just because he is convenient without regard for his professional attainment. Most members of the profession would prefer that the percentage of employment under the third class should be decreased to 00 per cent, for most of us have confidence enough in our own ability to feel that if we had a fair field and no favor we would get the job, and the members of the profession are as a rule sufficiently honorable and high-minded to wish that the time would come when favoritism or pressure of any kind would have nothing to do with the appointment of an architect. The only exceptions to this are the conscious incompetents who know that their livelihood depends upon favor and not upon skill; such men are, however, very few in the profession.

Everybody knows that there are a great many men who go into architecture simply because their financial or social connections will insure

them a certain amount of work; one man may be the son of a prominent operator in real estate, and another the son of the president of a large corporation, which makes building loans, and the selection of an architect is too apt to go by favor.

When we consider the fourth class there are certain difficulties attendant upon the selection of an architect. A man is often selected because he has done several buildings in one class of work; he may be known as an architect of banks or of office buildings, or of country houses, and yet the fact that he has done several buildings of one class may not prove at all that he is a competent architect. He may have secured all his previous commissions because of financial or other influence; he may be incapable of good design and ignorant of the principles of construction, yet because he has built a certain number of buildings the presumption is that he is an expert, and other buildings of the same class come to him for that reason.

Fortunately, however, there is something about the profession which takes hold of its practitioners in a way that few other occupations do. After a man has been practising architecture for a little while he gets to feel that he must produce his best, and he realizes that perhaps his best is not entirely worthy, and that he must have help and assistance from men stronger in design, and stronger in construction than himself. Members of the profession are apt to be both vain and humble, inordinately proud of what they have done, and very humble regarding their competence to handle all sorts of problems. There is probably no other profession in which the practitioners seek so constantly for expert advice from one another as in the profession of architecture, and there is probably no profession where expert advice is so lightly regarded by the general public. The attitude of the general public is a very curious one; a man may be a sincere admirer of the ability of his architect, without being in the least willing to defer to the opinions of that architect. It is by no means unusual to have clients insist on the most radical changes of design because they think they know more about design than the architects they employ, and yet these same men may boast of having employed extraordinarily good architects—and believe it—may be perfectly willing to pay a high fee for his employment, but do not realize that advice worth paying for is worth taking. People do not treat lawyers and doctors as they do architects, simply because they are not able to put their fingers on the places in which they might interfere. The average person would hesitate a long time before he told a doctor not to use nitro-glycerine for the heart, because it was an explosive, although the same people would refuse to use small panes of glass in the windows because they were English; and yet outside that one small point they might defer to the architect's judgment with complete confidence in his ability to design a reasonable, practical and workable house.—Architecture.

* * *

A Slight Difference

Two California engineers were discussing the merits of their stenographers. One mentioned the lack of a sense of fitness of things which resulted in the statement in his annual report that the San Joaquin Valley contains an area of 115,000 square inches instead of 115,000 square miles. He added that the error was barely discovered before publication.

Real Estate and City Planning

By JOHN NOLEN, Fellow American Society of Landscape Architects.

MOST of the city planning in the United States heretofore has been done from the point of view of real estate interests. For example, if we look back on the history of towns and cities, we find that nearly all "town sites" that have been deliberately planned have been laid out in accordance with the views of the owners of the property, and these views have been formed and controlled mainly by the prospect of successful immediate sales of lots.

This has been even more true of the laying out of suburbs, and of the extension of the city into the surrounding territory. From the standpoint of city planning, this laying out sometimes has been astonishingly good. On the other hand, sometimes it has been bad. It should be added that private real estate owners are seldom in a position to give proper attention to the establishment of main thoroughfares, and to the reservation of the large areas needed for public parks—two essentials of far-sighted city planning.

In the case of outlying suburbs, the real estate owner or operator has usually little opportunity to follow a city plan into the new territory, because none exists, and for one reason or another he has comparatively little opportunity to make his laying out of streets and lots correspond with any of the larger requirements of the neighborhood. Yet many real estate operators do all that they can do in this direction. One of the most progressive, in a public address, gave the following advice, which represents his own practice: "Put your addition on the map. At whatever cost, make at least one of your important streets an integral part of your city's boulevards or important thoroughfares. . . . Look ahead and provide in the very beginning all the land ultimately needed for park and boulevard property, because your greater profits within a very few years will far more than repay you. . . . Co-operation among yourselves and with the city authorities is surely one of the main essentials in the efficient method of platting land, and it always pays."*

Not only has the developer of the Country Club District of Kansas City practiced his own preaching, but the advantages of good planning have been recognized and applied particularly in the last two or three years by subdividers in all parts of the country: on the east coast, in Roland Park out of Baltimore, and in Forest Hills Gardens, the Russell Sage Foundation development on Long Island, N. Y.; in the south, by the Stephens Company, of Charlotte, N. C., and in the steel city of Fairfield, Ala., one of the developments of the Jemison Company, of Birmingham; in Ohio, by the E. H. Close Company, of Toledo, the Kissell Companies, of Springfield, the King Thompson Company, of Columbus, and in the Ottawa Heights development, of Cleveland; in Indiana, by the Wildwood Builders, of Ft. Wayne; on the west coast, in St. Francis Wood, developed by the Mason-McDuffie Company, of San Francisco, and at Atascadero, a new made-to-order city in Southern California. And this is only a partial list.

The public control of private real estate has been making sound progress recently. The necessity for this control has become more and more apparent to the public, and what perhaps is more important, the advantages of such control are now becoming more evident to the private own-

*J. C. Nichols, Kansas City, Mo.

ers of real estate. A few years ago the problem of the blighted city district was discussed at one of the sessions of the National Conference on City Planning. The question was asked, what is the blighted district, and what has it to do with the subject of city planning? A blighted district was defined as one in which land values, after a period of increase, are either stationary or falling; and its relation to city planning was said to be that it represents the absence or the failure of planning, and cries out for ameliorative treatment under the penalty of discrediting city planning, except for undeveloped areas. Recently there is a decided change of view as to the service that city planning may properly render to the owners of real estate, and this view is particularly well put in an editorial in a current number of The New Republic, in which the following statement appears:

"City planning hung in the air as long as the real estate interests were opposed to it or thought of it as esoteric and impractical. A comprehensive city plan is a challenge to the property owner, and as long as our laws give him protection against the community, organized opposition on his part can defeat such proposals. The conversion of the real estate interests to city planning is the crux of the whole movement. A document like the recent 'Report of the Advisory Council of the Real Estate Interests in New York City' is therefore of the utmost significance. It may mark a definite turning of the tide. It is an almost complete reversal of the attitude of ten years ago, when the first limitation of the heights of buildings in Boston excited real estate rage as an attack on the rights of the free-born American citizen. Real estate has now, it seems, turned against its own skyscraper. It admits that the 'present almost unrestricted power to build to any height has resulted in injury to real estate and business interests, and to the health, safety and general welfare of the city.' It admits that 'light, air and access, the chief factors in fixing rentable values, have been impaired by high buildings and by the proximity of inappropriate or nuisance buildings and uses.' Here it is quite at one with the public. These are exactly the things which the community is interested in keeping unimpaired and which the intelligently planned city does keep unimpaired. 'A certain degree of order and uniformity in building development is desirable from the point of view of public safety and welfare, and is essential to the safety and prosperity of real estate interests.' This is a far cry from the spirit which has built our chaotic cities—the fierce insistence on the right of every man to build as he liked on his own property."

"The Report of the Real Estate Interests" goes still further. It calls for severe restrictions in the use of private property by the establishment of zones or districts, asking the city authorities by public action "to do for the individual owners what they cannot do for themselves—set up uniform restrictions, that will protect each against his neighbor and redound to the benefit of all."

How refreshing these statements from the New York report are, and how promising for the future of American cities. It looks as if we can now agree that the planning of public features and the control of the use of private land of a city must both be done as parts of one city plan. The character and width of streets, the capacity of transportation lines, the location and extent of public parks, must each be fixed with direct relation to location, use and character of private buildings, the density of population, etc. Therefore, the restrictions imposed by the public control of private real estate serve the interests of property owners as well as the community at large, and are essential to the stability or increase of land values.*

*For a full discussion of the legal aspects of the public control of private real estate, see Chapter III, by Frank B. Williams, Esq., in the new volume on City Planning in the National Municipal League Series.

The larger part of the subject of real estate and city planning has to do with land subdivision especially as it relates to suburban property on the outskirts of cities. Now the controlling purpose of land subdivision is profit, to make money, as money is made in other forms of business, by dividing and in some cases making "improvements" in such a way as to realize the largest possible profit. We do not say that this should not be the controlling purpose, nor that it controls always or even usually to a degree open to criticism. We are merely stating a fact that must not be lost sight of. Indeed, the owner or operator who subdivides the land often considers very definitely the effect of the plan upon the purchaser or user of the land, and also upon the public, but this consideration is, and I think I may add, must be subordinate. His controlling purpose is profit.

A fair question for consideration here is, should the form and character of the subdivision of land be determined by the will of the land owners, whose main motive is profit? If not, who have claims for consideration, and upon what do such claims rest? Is land different from other things that are bought and sold?

There are really three parties to every land subdivision: the owner or operator; the prospective user, either as owner or tenant; and the public. Surely it would represent a great advance if we could come to look upon these three parties as partners in a common enterprise with certain overlapping interests in the proper subdivision and sale of land.

Therefore the central problem of land subdivision is public regulation, control and restriction. In fairness to all concerned, what should the real estate operator be authorized to do in this very important matter of dividing up and selling his property, thus changing agricultural acres into city and suburban lots, determining their form and use, from which they can be changed again, if at all, only at great cost.

The principle of restrictions in the subdivision and use of land is well understood in the United States and very frequently applied. In fact, it is so well understood and so highly valued that it is most often applied in a thoroughgoing way by the real estate operator himself in his own interest. The restrictions placed upon a purchaser in the conveyance of a plot of land often include a long list of the kinds of business which are classified as nuisances, and which may not be established or maintained upon the property; regulation as to stables and garages; fences and walls; set back of buildings from streets and from lot lines; minimum cost of buildings; easements and rights of way for public utilities; and in some cases, even the approval of plans and specifications of buildings, including their nature, shape, kind, height, material, color scheme and location; also the grading plans of the plot to be built upon. These restrictions, or, as some operators happily term them, "safeguards," are often placed for a period of twenty-five years or more with the right of renewal subject to the assent of the owners. All this is far-sighted and desirable, provided the restrictions are intelligently determined. But can we depend entirely upon the knowledge, skill and motive of the owner or operator to subdivide the land and place the restrictions? At best his action is dependent upon his own judgment, and sometimes this judgment is at fault. The restrictions are applied only in spots which he happens to control, and often when most public-spirited, are not always intelligent. Again, it should be repeated, his chief motive must be profit. He cannot reasonably be expected to have consistent and permanent concern for the results of his methods upon the future occupants of the property, nor upon the general public. Then, as has already been suggested, he does not always know what is best, and if he did, not

owning or controlling all the property of the city or town, or even of the entire neighborhood unit in which he is working, he would not be able to make his plans effective. Furthermore, he has only the power of a private citizen.

Some of the underlying principles of land subdivision which concern real estate owners and those who have to do with the planning problems of cities may be stated as follows:

1. A plan for the subdivision of property should fit the topography and give due consideration to natural features. The American gridiron plan has not been a success even for cities built on level ground. Its evils and cost when applied to cities with a rough topography are now widely understood.

2. Even if the land is relatively level, the plan should nevertheless have interest, good organization and design. The point of view that leads to a good arrangement of streets and lots on hilly ground gives also a good arrangement on level ground. Witness the competition for the subdivision of a quarter section of land carried on by the Chicago City Club. Although the land was described as level, none of the three plans awarded prizes followed in any way the characteristic checkerboard plan which usually prevails on such property in American cities.

3. The use that is to be made of the land should determine its general plan and restrictions. It may be said that there is no plan that is best for all places, nor for the same place for all time. Merit in land subdivision is largely a question of fitness for its original purpose, and its adaptability for probable future purposes.

4. Main thoroughfares and other broadly related city planning features such as large parks and public reservations should be located first, and within these lines and in conformity to them, local streets and blocks and lots should be laid out in the best possible manner.

5. The various standards for various classes of property, the lot widths and lot depths, the block widths and block depths recognized by the best authorities should be applied with skill and discrimination. These are by no means absolute or fixed; they are still open to discussion, and in each case are largely matters of experience and nice judgment. Still, there is some recognized law. For instance, the minimum requirements of detached, of semi-detached and of row houses, in which for this purpose there is substantial agreement, determine largely the width and depth of lots; the width and depth of lots determine largely the size of blocks; and the blocks determine the lay-out of the neighborhood. All these in turn react upon street widths, playgrounds, and other public features.

6. An increase of lots or residence sites by new land subdivisions and of the necessary streets should also be accompanied by a proportional increase of school sites, playgrounds, parks and other indispensable public features required by the estimated probable population of the area when fully built up. The best time to make these reservations of public spaces is when the land is originally subdivided. The cost then would be low, and should be assessed in accordance with the benefit.

7. The interests of the real estate owner or operator, of the prospective owner or user, and of the general public, should be harmonized as far as possible. In most cases this is not so difficult as it might seem. While the immediate interests of the three parties are not identical, they are not in the long run normally in conflict. It is part of the responsibility of the public, acting through well considered and equitable regulation and law, to remove the causes of conflict and thus to define the rights and duties of the several parties.

8. A plan for dividing land should consider not only its immediate use, but also its probable subsequent use, administration and maintenance, and should endeavor to forecast and provide for it. This may be done in part by the plan itself, and in part by binding restrictions, safeguards and conditions providing for permanency on the one hand, or it may anticipate a change or conversion into a different future use, on the other hand. Opinion of designers differ as to which is more desirable, a plan that makes change difficult or one that makes change easy. Here again it is a mistake to dogmatize. One thing is clear, however, even from a superficial study of land subdivision in its relation to city planning, namely, that the worst results have not been due usually to the low standard or the lack of fitness of the subdivision for its original purpose, but to its lack of fitness for the purpose to which there was afterwards an attempt to adapt it, or the low standard which the city permitted to be applied. Here, we believe, more stringent public regulation and control would be of great benefit to all parties, especially to permanent investors in real estate.

Land values are the result in the main of the collective action of the community. They are affected but not controlled by an individual owner, even though he hold a vast estate. After all, the city itself must make the more important decisions, and the contributions to city making on the part of private individuals come usually from great numbers. In the future American cities, as at present in foreign cities, the public authorities will plan the city. They will locate the streets and railroads, lay out the parks and playgrounds, develop the waterways, define the boundaries of zones for industrial, commercial and residential use respectively, and take the initiative generally in the planning of the city. Then the owner of real estate and the far-sighted operator will find that these more public methods of control which are adopted primarily for the good of the community as a whole tend also to stabilize or increase the value of city land.

* * *

One Thing New Under the Sun

THE following was sent out from Philadelphia in the shape of news matter under a recent date line:

"A Philadelphian who started to work on the problem in 1906 has perfected an 'invisible' show window, in which the goods on display are as clearly visible as though no polished surface of glass interposed between them and the observer, and one which, incidentally, by the very peculiarity of its construction, calls aloud for the attention of the passer-by.

"He has broken no law of nature, but he has bent one to his own use by the simple process of bending the glass.

"The glass, of course, still reflects the images of outside objects thrown upon it, but it reflects them downward into a darkened 'shadow box' and not out to the eye of the observer. It was impossible to rob the polished surface of the glass of its property of reflection, but by the very laws of reflection it was possible to focus them all into a space where they would do no harm.

"The 'invisible glass' curves downward and inward from a point above the observer's head. A barrier rising from the pavement to a height of three and a half feet directly under the outside line, from which the window above starts to curve inward, prevents the observer from stepping in underneath the curve, the only possible way in which he could get his eye in line with any of the myriad reflections and catch any glare.

"The space between the barrier and the lower termination of the curve constitutes the shadow box which receives the glare, and, being painted with a dull black pigment, absorbs it. For practical considerations the bottom of this barrier is constructed as a series of baffles and a wide, open drain with a deep slant to the bottom of the barrier, which is open underneath. This is to prevent the accumulation of rubbish, and by it anything thrown into the box will simply be thrown out again onto the pavement.

"But, while the principle is a simple one, the inventor discovered that the finding of the correct angle of curve for every fraction of an inch of the glass was by no means a simple matter, and he spent years in the task. In all he has made several hundred models, starting with sections of glass placed at angles to one another with ground joints, gradually increasing the number of sections and decreasing the size of each until he arrived at a base from which to construct his curve.

"One of his last models, before entering this stage of the work, was constructed of narrow strips of glass somewhat like a roll top of a desk, mounted in a brass frame, so arranged with screws that any section could be tilted to any desired angle. From this, by endless adjustment and observation, he finally arrived at the series of angles which formed the basis of his curve.

"Theoretically this curve could be plotted on a drawing board. And for a single source of glare it can, by drawing radiating lines about the selected point, covering the space between the top and bottom of the window and calculating the proper angle at which to bisect them so that the angle of reflection to the shadow box would equal that of incidence. The trouble with this method was that there might be an infinite number of sources of glare. The more practical way proved to be the series of very narrow adjustable strips of glass, checked up on each adjustment by running the eye up and down and sidewise over the entire field.

"But even then the work was not over. A mold would be made according to the basic plan and the glass bent over it, but a series of surfaces, unless infinitely narrow, do not constitute a curve, so that the plotted curve would not be quite true. There would be points here and there where the eye would catch a glare, and just one of these flaws would be enough to necessitate the making of an entire new mold and the bending of another curved sheet.

"He repeated the process many times, each one entailing considerable expense, until the perfect mold finally was produced.

"One of the most surprising features of his invention was that when he applied at Washington for a patent, in all that mass of successful and unsuccessful attempts on file there was none ever submitted which was declared as an attempt to eliminate glare from a polished surface, proving there is at least one thing new under the sun."

* * *

Cause and Effect

Little Boy—A penn'orth each of liniment and liquid cement, please.

Chemist—Are they both for the same person, or shall I wrap them up separately?

Little Boy—Well, I dunno. Muvver's broke 'er teapot, so she wants the cement, but favver wants the liniment. 'E's what muvver broke 'er teapot on.—Exchange.

Too Much Water Spoils Good Concrete

MORE than half of our concrete work is being done by contractors who have learned their trade by working for a short period on two or three jobs under the direction of a capable engineer, and afterwards applying the hints and suggestions so picked up by the rule of thumb. These contractors invariably put too much water into the concrete mass.

When mixing is done by hand it is usual for the small contractor to provide a flat board or floor about ten feet square upon which his batches are made. The materials are measured by wheelbarrow loads, usually three of crushed rock, two of sand and a bag of cement, and for richer mixtures a bag and a half of cement is used. Four men with shovels turn the mass over completely a couple of times while all the materials are dry, and then the water is added by dipping pails from a barrel or through a garden hose, if such a convenient supply of water is at hand. The laborers then are supposed to give the wet material three complete turns before it is considered to be properly mixed. Now it just happens that as the water goes into the mass the shoveling process becomes heavier and heavier. It clings together, sticks to the board, balls up into chunks and only becomes an easier process as more water is added. When mixing is done by this process there is no distinct and settled measure for the water that goes into the mass. The contractor merely wants it as completely mixed as he can possibly get it, and the men with the shovels want that process to be just as easy as possible. The dry materials continue to take up water and to retain it for a period after it has accumulated all of the water that it can possibly retain in the mechanical and chemical processes that take place in the hardening of the resultant concrete. As a consequence of this procedure from 10 to 15 per cent of excess water is taken up by the concrete mass, which within a very short time becomes evident. Where the material is placed after mixing, the excess water is excluded and rises to the top of the mass. It is much better that this excess water should never be put into the concrete at all, for water is practically incompressible and the squeeze required for its exclusion causes weak veins in the concrete, which tend to make it spongy. It is probable that this excess of water is one of the causes, at least, of the crazing of some slabs and floors.

When a mixer is used the procedure is to charge the drum of the machine with a given volume of aggregates and cement and then give the drum from three to five turns so as to mix the dry materials, and then add a measured amount of water—the water being put into the drum just as promptly as can be done, while it is spinning. As soon as the water strikes the mass a very pronounced increase of power is required to drive the drum, which gets less and less as the mixing process becomes more complete. Right at this point the time element becomes an important factor in the mixing, for there is always a tendency to increase the amount of water to shorten the length of time to secure the mix. With 10 or 15 per cent decrease of the water and twice as much time devoted to the mixing, what seems to be about the same result will be obtained, but a very great difference in the material and the resultant concrete can easily be observed. These proportions are not intended to be exact, because they vary with different types of material, but this is mentioned to draw attention to the fact that there is no good substitute for the time element in securing a good mixture, and the apparently simple method of giving it a little too much water is the very worst thing that could be resorted to in whooping up the speed of the work.

For several years there has been a great deal of concrete laid by the use of towers, having gravity chutes to convey concrete from the mixer to the various parts of large jobs. The process has seemed to meet with very surprising success to those who know that when concrete is mixed so as to be somewhere in the neighborhood of its maximum in the values for which it is made, that there is a pronounced tendency when chuting it through a trough for the larger pieces of aggregate to separate from the mass and roll down ahead of the smaller particles, after this the stiffer mortar, and last of all wet slush. Observation shows that the wetter the mass up to a certain point, the faster this separation will occur, and yet when it comes from the mixer just about right it will not flow with anything like the promptitude necessary to clear the chutes. It is apparent that if a large proportion of the heavier pieces of the mass did separate and rattle down the chute ahead of the bulk of the batch, that the forms would not be filled with the same kind of a mixture that was produced at the mixer, but a regrading of the concrete mass would occur.

Having seen a great deal of work that has been sent through the chutes, which to observation appears to be all right, and this being backed by the assurance of tests made upon such structures, one is tempted to withdraw all objection to the use of chutes. Yet the principles cited are always present and consequently it is to be doubted if such a method is really good practice, and will always give the good results which the present wide adoption of the use of chutes for placing concrete seems to promise.

It is certain that too much care or too much attention can never be expended upon securing the perfect mixture of the materials that go to make up the concrete mass, nor for getting them uniformly and properly placed. These are the main points of good concrete work.—Rock Products.

* * *

The Artistic Temperament

A writer in The Hospital, London, quoted in The Literary Digest, says that it is a mistake to suppose that the artist necessarily possesses the artistic temperament. If the artistic temperament be as defined by this writer, it is evident that no artist would be worthy of respect if he possessed it.

He says that the artistic temperament is characterized by excesses in adult life, by lack of discipline and self-restraint, by selfishness, by incapacity for steady industry, by unwillingness to undertake any task that is not pleasant and congenial, by inefficiency, procrastination, by commencing things that are never finished. In short, by imperfection in every detail of human character.

Those who are so unfortunate to possess this temperament he declares are in business affairs unthrifty and extravagant. "They spend disproportionately on present indulgence, on personal adornment and pleasure, and have little regard to future wants, and none whatever for the welfare of others, even of those nearest to them. They borrow without any intention to repay; they cadge without shame, and care not of how much they may deprive others so that their own immediate wants are satisfied. Anyone—father, mother, sister, wife or even child—may work for them or want for them and they take all that is given to them as their natural right, for which they express no gratitude. Even the ordinary obligations of morality are not acknowledged as applicable or binding to themselves, etc."

The above quotations are enough to convince one that someone with the "artistic temperament" must have done this writer a grievous injury.

Perhaps some item from the aforementioned calendar of roguery or maybe a combination of several.

It is grievous libel on the profession of the artist to denominate such a catalogue of crimes as "the artistic temperament."

* * *

Compressive Strength of Portland Cement Mortars and Concretes

A PUBLICATION has just been issued by the Bureau of Standards, Department of Commerce, on the "Compressive Strength of Portland Cement Mortars and Concretes," which will be of interest to contractors and engineers and, in fact, to all users of cement.

Concrete differs from most structural materials in that it is not manufactured at a mill or plant according to chemical formula, under the observation of skilled specialists, subject to rigid inspection and test and such control as to produce a uniformly homogeneous product; nor is the process of manufacture completed in a few hours or days as in the case of steel products. Furthermore, concrete is made from materials obtained from sources differing widely in characteristics which affect its quality. The proportions of the ingredients, the amount of water used in mixing, the thoroughness of mixing, the manner of placing, the atmospheric temperature and humidity, exposure to sun, rain and wind, immersion in fresh water, sea water, or other natural solutions, all affect the quality of the concrete.

All these matters are discussed in the Bureau's publication, which contains the results of some 20,000 tests. The general effect of variation in the methods of preparing the concrete is shown, and suggestions are given as to the proper methods to follow in order to obtain the best quality of concrete.

Many users of cement believe that the strength of concrete is entirely dependent upon the quantity of cement used in the mixture. This is not true, as a mixture lean in cement but properly made may have much greater strength than a rich mixture improperly prepared.

While there are not a great many failures of concrete structures, the majority of those which do occur are due to careless methods of preparing and placing the concrete, or ignorance of the effect of variable treatment. Most of the concrete used in building construction work today is mixed with an excessive quantity of water, which permits of economic transportation from the mixing plant to the forms by means of chutes and troughs, but this excess of water may result in reducing the strength 50 per cent or more from that which could be obtained by using a lesser quantity of water.

The paper states that certain generally accepted methods of testing aggregates and proportioning mixtures are incorrect and suggests methods of selecting concrete aggregates, proportioning the mixture, mixing, placing and curing.

Copies of the publication, Technologic Paper No. 58, may be obtained free upon request to the Bureau of Standards, Washington, D. C.

* * *

Cracking in Concrete Roads

PROBABLY more criticism of concrete pavements is centered on the cracks which occur than upon any other features of this kind of construction. A. N. Johnson, state highway engineer of Illinois, in a paper before the American Road Congress, attributed the formation of cracks to unequal settlements of the sub-

grade, supplemented by external stress due to the passage of heavy traffic or to the movement of the slab under temperature changes. In commenting upon this, Henry S. Spackman refers to experiments conducted by him which showed that when concrete is mixed as wet as it generally is in modern road work it shrinks during the first twenty-four hours and then expands during the next three or four months, the shrinkage being undoubtedly due to a draining out of the water and the expansion to the continuation of the chemical action, which continues for months and even for years in a continually lessening degree. In view of this shrinkage which begins almost as soon as the concrete is laid, it seemed impossible to prevent the cracking of the pavements unless the exudation could be prevented. Mr. Spackman has experimented with the addition of hydrated lime for this purpose, and compared 18 test pieces to which hydrated lime had been added to the extent of 10 per cent of the amount of cement in some instances and 20 per cent in others, and 9 test pieces containing no lime. During the first twenty-four hours the average contraction for those containing hydrated lime was .007 per cent, as against .015 per cent for the pieces containing no hydrated lime. At his suggestion also the Office of Public Roads laid a short stretch of road at Chevy Chase, Washington, D. C., using hydrated lime, and another was laid near Salisbury, Md. These experiments all lead him to believe that the addition of 10 to 15 per cent of hydrated lime will be found beneficial not only in reducing cracks but also in eliminating the formation of holes and soft spots. Such addition, he says, not only causes the mortar to hold the water, but the more plastic and viscous mortar eliminates the segregation of the cement from the sand and secures a more homogeneous mixture, lessening the liability of pockets of material deficient in cement.

* * *

The Modern Apartment House

There seems to be no end to the inducements offered by owners of flat buildings to prospective tenants. An interesting folder recently issued in Chicago covering the feature of a court apartment enumerates the following advantages.

Maid service by hour or day.
Grecian cafe at reasonable prices.
Vacuum cleaners at your own disposal.
Extensive lawns and attractive shrubbery.
Beautiful flowers, tennis courts.
Free swimming pool with heated water, summer and winter.
Finely equipped gymnasium with free instructions in art of fencing and Swedish movements.

The following are classified as innovations:

Disappearing bed in each apartment.
Especially designed consoles. Buffets with plenty of drawer space and shelf room.
Shower baths, mosaic floor and beautiful bathroom equipment.
Steel medicine cabinets, wall safes, out-of-sight garbage receptacles.
Merchandising receiving cases, inside white enameled self-draiming refrigerators.
Practical self-lighting gas ranges. Heavy, luxurious Brussels stair carpet used in harmony with the woodwork. Curtain rods and all necessary fixtures to all windows.
White enameled steel kitchen cabinets, sugar and flour receptacles and glass rolling pin; dressing mirror in closet door, electric light fixtures of the latest design.

The architecture is said to be of a new and unique design with sunparlors and private screened sleeping porches, containing apartments of 2, 3, 4, 5 and 6 rooms each. The approaches to this building are by means of beautiful courts and lanes, protected by self-locking front doors with electric openers controlled from each apartment.

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY

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T. C. KIERULFF - - - *Legal Points*
FREDERICK W. JONES - - *Editor*

Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer.

BUSINESS OFFICE AND EDITORIAL ROOMS
617-619 Monadnock Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION

(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. XLVI. AUGUST, 1916 No. 2

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THE ARCHITECT AND PREPAREDNESS

A widely printed advertisement of the engineering societies tells us that "in the United States five great engineering societies—civil, mining, mechanical, electrical and chemical—have pledged their services to the Government of the United States, and are already working hand in hand with the Government to prepare industry for national defense."

These societies are doing a great patriotic service in seeking to mobilize industries so that they may be able to come to the aid of the country in the event of threatened war.

To many members of the American Institute of Architects, says the Building Review, the thought has no doubt occurred as to what can an architect do to help in the way of preparation against war? The arts can flourish only in times of long-continued peace and architecture is no exception to this general principle. Therefore it is a foregone conclusion that the architect does not desire war but insurance against war. What else can he do except to enlist and fight if it comes to that?

On the first day of mobilization in France twelve of the thirteen hundred students of the Ecole des Beaux Arts immediately reported for duty and we are told that the architects both at home and abroad were among the first to offer their services to the defense of their country.

The architect has a highly trained eye and ought to make a good marksman, but we confess that we are at a loss for a suggestion as to how he might co-operate professionally in matters of "preparedness."

BUILDING HOUSES WITHOUT ARCHITECTS

There are many persons of intelligence even in this age of efficiency who fail to understand the necessity of employing an architect when they want to construct a building.

Possessing an unlimited ignorance of the profession of architecture,

they totally fail to comprehend the duties of an architect. But they do understand that he gets a percentage for his work. And so to save money they often go ahead, treading with the calm confidence of ignorance in paths which are beset with pitfalls and which they would most sedulously avoid if they knew their existence.

This penny-wise policy is responsible for many architectural monstrosities throughout the country. It has been the cause of a great deal of litigation and worry. But conditions are not as bad as they once were. There are probably fewer people today who are confident of their own natural, though untrained, ability to plan a building than there ever has been in the past. That is one of the reasons why the standard of architecture in the cities and towns is improving. This is especially noticeable in the construction of small residences. There are more small and comparatively inexpensive homes of architectural excellence being built today than ever before. A residence doesn't necessarily have to be of expensive construction to be of pleasing appearance and correct arrangement.

When a man wants to draw up a legal document he consults a lawyer. Yet he would be just as foolish to plan a house, attend to the many details that precede the beginning of construction work, and attempt to solve unaided the problems that arise during the period of construction, as he would be were he, being unskilled and unversed in law, to attempt to draw complicated legal documents or enter upon a law suit unaided by legal advice.—Improvement Bulletin.

PREFERRED CONTRACTORS

So far as courteous treatment, consideration, fair dealing, and an opportunity to investigate and bid on work suited to their various abilities and resources is concerned, there should be no preferred favorite among honest and reliable contractors.

This does not, however, mean that all contractors are entitled to invitations to bid on all contracts or that the awards should necessarily be made in all cases to the lowest bidder. The owner, especially in the case of an individual, is as much entitled to personal preferences as is the contractor himself in choosing his lieutenants, developing his organization and selecting his business methods. The contractor should be treated openly and fairly so long as his work is efficient and satisfactory and his dealings upright. If these conditions cease to obtain, then it is not desirable to include him among the bidders and he should automatically cease to be permitted to contract. Fortunately, says Engineering-Contracting, the proportion of undesirable contractors who remain in business or are connected with important work is small.

The selection of contractors for given work, either large or small, will generally to a certain extent determine itself on natural lines. As each man will be interested in and prepared to bid on work of a magnitude and character adapted to his experience and capabilities, his standing in his line will already be more or less established and the number of bidders will ordinarily conduce to proper competition and reasonable prices. The exception is the new man without experience or reputation in the field who is trying to break in, and the unduly low bid that he may be willing to make for a chance to enter the field is offset with an experienced and conservative engineer or owner by distrust of his efficiency, or, on the other hand, his uncertainty regarding the attitude of the owner or engineer and the interpretation of the specifications leads him to protect himself by a higher bid than he would otherwise make.

Such discriminations on either side do not imply favoritism, but merely the application of sound, conservative principles. The chief hardship likely to be involved is that of permitting, inducing, or virtually

compelling a number of contractors to duplicate costly work in the investigation of a contract and the preparation of estimates where several bid and only one can be awarded the work. This has always been an irritating and wasteful feature which can be largely eliminated by a more careful and authoritative presentation of data by the owner and engineer. They cannot evade the final responsibility and payment and it will in the end be much cheaper and more satisfactory if they furnish the contractor in the first place with sufficient reliable data for the preparation of an accurate bid, make provision for uncertainties and contingencies by determining compensation for special modifications or developments either on a unit basis or some other equitable arrangement. The economic advantage of thus doing the work once instead of five or twenty times is obvious and will benefit both the owner and the contractor alike. Besides this, it simply puts all the contractors on an exactly level basis and gives the owner the great advantage of easy comparisons of bids on precisely the same lines.

The contractor who has had long experience in a certain class of work, who is expert in difficult construction of one kind or another, is already provided with a large amount of suitable plant or he may have special facilities for utilizing by-products or reducing costs. He is entitled to consideration on these counts, just as one who is reputed to be reckless or financially unsound may be unacceptable in some cases and permissible in others. Larger selection and discrimination therefore should be maintained and the best results will be secured when the owner or his experienced engineer issues invitations to bid on important work only to a number of contractors known to be well qualified to execute it.

Personal

Fred E. St. John, architect, announces the removal of his Fresno office from the Cory building to 333 Rowell building.

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Large Produce Building

Hunt, Hatch & Company are to erect a one-story store building covering an entire block at Second and Franklin streets, Oakland, from plans by Architect C. W. McCall. Structure will have a total street frontage of 800 feet and will be divided into stores, the size of which will depend upon the tenant. Construction will be steel, brick and terra cotta.

Sacramento Masons to Build

R. A. Herold, Forum building, Sacramento, has resumed work on Sacramento's new Masonic Temple to be built on the northwest corner of Tenth and J streets at a cost of $300,000. Structure is to be Class A, five stories high, 100x160 feet, and built of steel, concrete and terra cotta. George Stevens is president of the Masonic Temple Building Association.

Arthur Brown a Benedict

The marriage of Miss Jessamine Garrett, daughter of Mrs. Thomas Garrett of Seattle, Wash., and Mr. Arthur Brown, Jr., occurred July 19th at Trinity Parish Church, Seattle. Mr. Brown is junior member of the firm of Bakewell & Brown, architects of the new San Francisco City Hall.

New Architectural Firm

Messrs. Morrow & Garren, a new firm of architects, with offices in the Chronicle building, San Francisco, have completed plans for a $25,000 one-story high school to be built at Lakeport, Lake county. They have also made preliminary sketches for a $12,000 Berkeley residence.

Oakland Apartment House

Messrs. Richardson & Burrell, Albany building, Oakland, have completed plans for a three-story frame apartment house for A. F. Eliel. It will cost $35,000 and will occupy an attractive frontage on Alice street, Oakland.

Theater Alterations

E. C. Hemmings of Sacramento has prepared plans for extensive alterations and additions to the Heilbron Estate theater on J street, that city. Nearly $100,000 will be expended in improving the playhouse.

San Jose Office Building

Actual construction has been started on a five-story Class A store and office building at First and San Antonio streets, San Jose, for Judge John Twohy. The general construction is in charge of Twohy Bros. Building was designed by William Binder.

Trees and Shrubbery Not Wanted

George W. Kelham, architect for the new San Francisco library building in the Civic Center, has written the Supervisors asking that no trees or decorations of any character be planted around the structure. The plans were drawn, Mr. Kelham says, to give a wide base of simple lawn for the building to rest upon. Any other kind of planting, whether trees or flowers, would break the simple grass surface, he thinks, and entirely ruin the effect for which he was striving.

S. P. to Do Much Building

Within the next twelve months the Southern Pacific Company expects to spend fully $1,500,000 in new construction work in San Francisco. Contracts have been let for a ten-story office building for the company on Market street, between Spear and Beale, and plans have been completed for two large freight terminal sheds, one 60x825 feet, to be erected on Berry street, and the other, 60x150 feet, to be erected at Sixteenth and Harrison streets.

Telephone Building

Plans have been prepared by George W. Howard of Howard, Maybeck & White, architects in the Lick building, San Francisco, for a $15,000 telephone exchange building for the Pacific States Telephone Company. The building will be constructed of brick and will occupy a business site in Hillsborough, being intended to answer the needs of the company's subscribers in that city, San Mateo and Burlingame.

Eleven-Story Concrete Hotel

Messrs. Morgan, Walls & Morgan, 1138 Van Nuys building, Los Angeles, have made plans for an eleven-story and basement reinforced concrete hotel to be erected at Sixth street and Grand avenue, Los Angeles, for Frank Simpson. The building will be 60x80 feet and will contain 150 rooms with private baths, lobby and several store rooms.

Extensive Residence Alterations

Messrs. Welsh & Carey, Merchants National Bank building, San Francisco, are preparing plans for extensive alterations to the two-story and basement residence at 3650 Washington street of Mrs. W. P. Hammon. A contract for a small portion of the work has been let.

Will Build Costly Residence

Fred B. Henderson, of the Orpheum Theater, has purchased the northwest corner of Washington and Laurel streets, San Francisco, upon which he intends to erect a city residence to cost in the neighborhood of $40,000. G. A. Lansburgh is preparing the plans.

San Jose Architects Busy

The San Jose architects have more work than for several years past.

Architect F. D. Wolfe, Auzerais building, has taken figures for the construction of a $6,000 two-story residence on Thirteenth street, Neglee Park, for Theo. Keech. The exterior will be of plaster, with shingle roof.

Figures also have been received for remodeling the exterior of a three-story brick business building at Los Gatos for Walter Prider.

Plans have been completed for remodeling the Campen garage on San Pedro street, at an estimated cost of $3,500. A new front, new roof and entire new interior are included in the work.

A contract has just been let to R. S. Herschbach for $4,975, for the construction of a two-story house at Palm Haven for C. F. Allen.

Plans have been completed by Architect Wm. Binder, Rea building, for the construction of two buildings on the high school grounds. One will be a gymnasium, 100x70 feet, with a concrete and tile lined plunge 20x60 feet. The other building will be one-story frame for the study of home economics.

Plans are being prepared by Architect Binder for a tubercular ward at the Santa Clara County Hospital. The building will be 40x100 feet, with sliding glass windows and screens throughout. The roof will be shingle. Estimated cost is $10,000.

Plans have been completed by Mr. Binder for the construction of a two-story reinforced concrete store and lodge building at Hollister for the Grangers Union. The estimated cost is between $40,000 and $50,000. Steel rolling fire doors are to be used.

Contractors have been figuring the general construction of a large Class C addition to the Notre Dame Convent on Santa Clara street, San Jose. The plans were prepared by Architect Wm. Klinkert, Minnesota avenue, San Jose. It is said the building will cost between $75,000 and $100,000.

$200,000 Office Building for Oakland

The Pacific Gas and Electric Company has concluded a deal for the purchase of the southwest corner of Seventeenth and Clay streets, Oakland, upon which will be erected an eight-story Class A office building to cost not less than $200,000. Messrs. Dickey & Donovan will be the architects.

Personal

Octavius Morgan of Los Angeles recently returned from Washington, D. C., where he attended a meeting of the board of directors of the American Institute of Architects, of which he is a member.

Suffers Loss by Fire

Friends of Mr. J. W. Fricke, president and general manager of C. F. Weber & Company, manufacturers and distributors of school, church and office furniture, 365-367 Market street, San Francisco, were shocked to read in the daily papers of the partial destruction of his home on July 15th. The fire started from a defective grate in the house adjoining the Fricke home and spread rapidly. The upper story of the Fricke house was practically destroyed, while the lower floor, with most of the furniture and draperies, was badly damaged by water and smoke. A valuable library which Mr. Fricke had accumulated for twenty years was ruined. This collection contained many valuable works, including some rare de luxe editions which never can be replaced. A book expert had, previous to the fire, placed a valuation of $3,000 on the collection. The fire also destroyed a valuable fishing outfit, which was the envy of many a sportsman. Among the collection was a fly book containing a large assortment of rare domestic and imported flies.

Fresno Hospital

Plans have been completed by Julius Krafft & Sons of San Francisco for a four-story reinforced concrete addition to the Burnett Sanitarium, Fresno. Bids will be taken at Fresno and also by the architects. The building will cover a ground area of 130 by 41 feet, with a 60-foot wing and will be four stories and basement. Walls and floors will be of reinforced concrete, the beam and slab type being used. Partitions will be metal lath and stud, stairs of concrete and terrazzo, all floors will be coverd with either tile, oak or linoleum, rooms and corridors will have tile wainscot. Operating rooms will be enamel tile. Roof will be tar and gravel, with galvanized iron cornice. There will be two fire escapes, stand pipes and hose reels for fire protection, hot water circulating system, steam heat with oil burner, and two elevators.

Clarence Ward Puzzled

Friends of Clarence Ward of Ward & Blohme, architects, will appreciate the following, which appeared in the San Francisco Chronicle:

Clarence Ward couldn't help but overhear a portion of a conversation at the Orpheum the other night, and he has been wondering ever since what the rest of it was.

Directly in front of him sat two women. One was of middle age, the other a girl of about twenty. Kosloff had just finished one of his wonderful dances.

"My, isn't he handsome?" exclaimed the young woman.

"Yes, but he has a sensual face," replied the older of the two.

"What's that?" asked the girl.

The older woman leaned over and whispered something. That's the part Clarence Ward didn't hear. But he did hear the girl's reply.

"I don't think the audience noticed it," she said. "They applauded like everything."

Vallejo Enjoys Building Boom

Building permits aggregating $184,520 were issued in Vallejo during the three months ending July 1st, this amount being the highest record for a similar period ever established in Vallejo.

The building during the last quarter represents eighty permits, and includes everything from a small repair job to a $47,000 apartment house.

The high figures are due to the fact that several business buildings have lately been started, including one for the Bowman Furniture Company, another for the Solano Brewing Company, S. M. Levee and an addition to the Schwartz building.

Succeeds Engineer Newman

Mr. Frank G. White, a resident of Palo Alto, who has been in the harbor engineer's office in San Francisco for five years, has been promoted to be engineer for the State Board of Harbor Commissioners, succeeding Mr. Jerome Newman, resigned. His promotion brings with it almost a doubling of his salary, the State Commission's engineer drawing $5,000 a year. White is a graduate of the University of Iowa and prior to becoming a member of the State harbor force was employed in engineering work for the city of San Francisco.

Oakland Architectural Exhibit

The following announcement has been received:

The Alameda County Society of Architects will hold their first exhibition in Oakland, October 2d to 10th. The exhibit will consist of the selected work of all architects on the Pacific Coast.

Heretofore San Francisco has always been favored with the exhibition, but through the cooperation of the architects of San Francisco Oakland has been selected as the exhibition city this year.

The object of holding the exhibition is to bring the selected work of the other exhibitors and architects before the public and in this way stimulate building activity.

The exhibition will consist of architectural drawings in pencil, pen and ink and colors; also photographs of completed work with plans; sketches for mural and interior decoration, furniture, stained glass, ornamental iron, sculpture, ornamental architectural decorations in bronze and plaster, and scale models of buildings; pottery and pictorial tile and terra cotta; specially designed lighting fixtures and lamps and building material.

Will Have Larger Offices

After September 1 the business offices and editorial rooms of The Architect and Engineer will be on the sixth floor of the Foxcroft building, 68 Post street, San Francisco. The growth of the magazine and various additions to the working force have made it necessary to seek larger quarters. The new offices will be especially fitted up for the business and editorial departments. The location is considered one of the best in the city.

Competition Announcement

The Board of Control of the State of California announces to the architects of California:

That the people of California have authorized the issuance of bonds to the amount of $1,000,000.00 for the purpose of constructing, furnishing and equipping the San Francisco State Building, to be located on the Civic Center in the City and County of San Francisco, California; that these bonds have been sold and the money is now available; that the Board of Control has instituted a competition for the selection of an architect to design and supervise the construction of this building.

Section No. 11 of the Department of Engineering law of the State of California, which empowers the Board of Control to institute this competition, provides that the State Architect shall act as architectural advisor[4] in connection therewith.

The competition will be conducted in two stages and is confined to California. The first stage is open to all certificated architects of the State of California who have had the necessary experience, subject to the conditions prescribed in the Program of the competition.

The second stage will be open only to eight architects selected by the Jury from those competing in the first stage.

No competitor shall receive any remuneration unless chosen by the Jury and submitting drawings in the second stage. The Program for this competition is approved by the San Francisco Sub-Committee on Competitions of the American Institute of Architects.

Architects desiring to compete must file with George B. McDougall, State Architect, Forum building, Sacramento, California, a written request for a copy of the Program. On September 1, 1916, copies will be mailed simultaneously to all architects from whom written requests for same have been received. Copies will be mailed to architects making written request for same after September 1st, at the time of the receipt of such later requests.

BOARD OF CONTROL OF THE STATE OF CALIFORNIA.

(Signed)
John Francis Neylan, Chairman.
Paul Herriott,
Freeman H. Bloodgood,
Members Board of Control.

P. J. Tehaney, Secretary.
Dated, August 1, 1916.

Plans Large Apartment House

Messrs. Richardson & Burrell, Albany block, Oakland, have completed preliminary plans and will prepare working drawings immediately for a nine-story reinforced concrete apartment house costing about $200,000—to be erected for a syndicate of owners in the apartment house district of San Francisco. The building will be faced with pressed brick and terra cotta, have five passenger and service elevators, steam heat, hardwood floors and trim throughout, tile baths and wall beds. On the first floor will be the social rooms, lobby and offices, with billiard rooms and service in the basement and ballroom on the roof. In all there will be forty-eight six-, seven- and eight-room apartments.

Partnership Dissolved

The architectural firm of Mitchell & Hodges, Bankers Investment building, San Francisco, announce the discontinuance of their association.

Fitzpatrick Would Standardize Bank Buildings

EDITOR THE ARCHITECT AND ENGINEER OF CALIFORNIA:

Thanks to you and to Mr. Weeks for a splendid text for a favorite sermon of mine! No better material has ever been put into my hands.

I've long advocated the standardizing of minor buildings for Government purposes. It would expedite building, save money and time and be better in every way than for the supervising architect (or the commissioner of public buildings soon to be) to painfully and expensively "design" and detail every $50,000 building so beneficently ordered by a wise and public-spirited Congress—albeit some do call the act "pork."

The architects have reviled me and called me unblessed therefor, and clamor not only for special plans for every building but for their being made by outside architects instead of the supervising architect, whom they would relegate to the superintending and mere routine office work attendant upon such construction. The principle reason alleged (note that I say alleged) for this desire on their part is to secure real beauty, variety, originality and individuality in Government buildings. That sounds mighty good and thousands of laymen have taken it up as a chorus so that the word "standardize" is utterly taboo in the circles of the elect. The really good piously roll their eyes at it and believe me to be a perfectly awful person, inartistic, laboring for the overthrow of art, etc., etc., for fathering such a project and urging its adoption.

Now, keep well in mind the terms Variety, Originality, Individuality. Then look at your June frontispiece, the D. O. Mills National Bank at Sacramento, then the Bank of California at San Francisco, page 40; the Stockton Savings Bank, page 46; the People's Bank at Santa Cruz, page 49, and the Italian-American Bank at San Francisco, page 52. These five and their half dozen first cousins on the other pages of that particular article are all good banks, quite artistic and all that, I'll admit, but, come now, are they not most thoroughly standardized, indeed stereotyped, fac-similes one of the other? Wouldn't any one of them have served as well as any other for every one of them? Can you tell one from the other? Did you ever see a stronger, more convincing argument for standardization? Could anyone have played more thoroughly into the hands of the "common enemy" than did the kind gentleman who gathered those photos and wrote that article? Could I possibly have a better text for all future sermons on standardization and prepared by the very men who bucked me the most? Variety, Originality, Individuality, forsooth!

If one State can stand such painful uniformity in its banks, prepared by the best of its talent, surely can forty-eight States stand having a dozen widely separated buildings from identical plans. I submit that the blueprints of any one of those bank buildings could have been used for all the others and no one would have been the wiser. It certainly would have saved some architectural fees, much paper, time, pencils and ink. For, mark you, every blessed molding and quirk about all those buildings had to be specially studied (?), and detailed, and that by men who take duck fits if you but mention stock patterns of doors or windows to them.

Indeed, in the interest of economy, expedition, accuracy, certainty of cost, efficiency and art, I'm going to advocate the standardization of plans for much private as well as Government work, stock plans of high degree and absolute correctness for various classes of building, and I'll point my arguments with the splendid object lesson of those California banks so carefully, nicely and compactly assembled for me. Variety, Originality and Individuality! Zounds, gadzooks and then some. It is to laugh! Merci.

F. W. FITZPATRICK.

Banks Read The Architect and Engineer

Santa Clara, Cal., July 11, 1916.

Mr. W. H. Weeks, San Francisco Cal.

My Dear Mr. Weeks: I enclose herewith page cut from the June issue of The Architect and Engineer of California.

We certainly do not appreciate the fact that a rival institution is given credit for owning a modern building designed and built by your good self. Feel sure that some error must have emanated from your office.

Will you kindly give this your attention and have the publishers rectify this error.

Kindly let me know what can be done in the matter and oblige,

Yours very truly,

F. A. BIRGE,
Assistant Cashier Bank of Italy.

Upon receipt of the above letter Mr. Weeks, architect of the building, wrote us the following:

July 14, 1916.

The Architect and Engineer,
Monadnock Building, City.

Gentlemen: The enclosed letter, with picture, was received from Mr. Birge, former cashier of the Santa Clara Valley Bank. The name of the bank was formerly the Santa Clara Valley Bank, but was changed when the bank was taken over by the Bank of Italy.

If you will kindly make some mention of this in your next issue it will be greatly appreciated.

Yours very truly,

W. H. WEEKS.

[As stated in Mr. Weeks' letter, the building was formerly known as the Santa Clara Valley Bank, which explains why that caption was used when cut of the building was published. The old name still appears on the top of the building and the bank should put up a new sign if it wishes the press to be correct in its announcements.—Editor.]

Electrical Department

Simple Methods of Spot-Lighting in the Home

By HERBERT E. IVES in The Lighting Journal.

This article describes two simple arrangements on existing lighting fixtures for spot-lighting a statuette and a picture, on which the intensity of light from the general lighting in the room was insufficient.—Editor.

BECAUSE spot-lighting is usually associated with the theater there is no reason why it should not be used elsewhere, even in the home. While of course it would hardly be in good taste to thus make a "star" of the hostess or "lion," there can be no objection to emphasizing by special illumination some favorite picture, bit of statuary, or other object of art.

Usually such special local lighting calls for additional light sources, with the attendant bother of extra piping or wiring. It sometimes happens, however, that by the use of specially designed shades or reflectors all the advantages of spot-lighting may be secured without multiplying the lighting units. Two examples of such devices form the subject matter of this note.

One case of home spot-lighting is illustrated by the first group of photographs. Here a small copy of the Nike of Samothrace, standing on a pedestal in a corner of the room, is lighted solely by diffused light. Under this illumination it does not stand out from its background nearly so conspicuous as is desirable. To light it properly the expedient shown in Fig. 4 was adopted. A small ornamental mirror was attached to the supporting chain of the suspended bowl "windolite" fixture which furnishes the diffused lighting for this part of the room. The mirror, while subtracting a negligible amount from the light going to the ceiling, nevertheless sends a strong beam to the statue. As a result the Victory now stands out brilliantly, an object of gleaming beauty.

The second home spot-light shown was arranged in order to properly light

Before. After.

Fig. 1. The statuette as lighted solely by diffused light does not stand out from other objects in the room. Under the spot-light it takes on a proper emphasis.

Fig. 2. Picture over fireplace, without special lighting.

Fig. 3. The same picture as Fig. 2, with illumination by spot-light provided by cutting an opening in the fireside seat lamp shade.

a picture which, while chosen for its abounding deep reds and browns, emphatically needed higher illumination by night than the regular light of the room afforded. This picture hangs over the fireplace, and for its spot-light, use is made of a small lamp intended primarily for the fireside seat. This light is a "Junior" Welsbach with a cretonne shade, mounted on a newel post at the front of the seat, as shown in the photographs. Here, instead of using a mirror, a simpler scheme was followed, that of cutting a small aperture in that side of the shade facing the fireplace and the picture. Thus there is directed to the picture a beam of light which is not missed from beneath the shade, nor can it strike the eye of anyone in the room, unless he takes the unusual position of standing with his back against the fireplace.

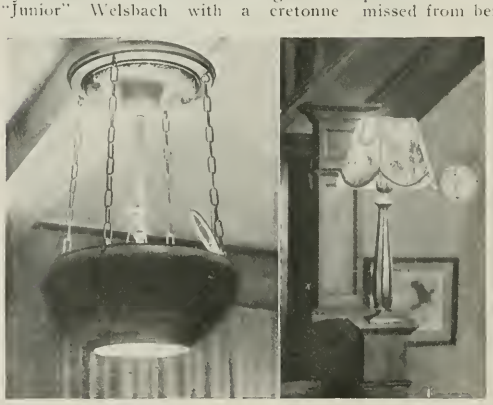

Fig. 4. Central fixture with small mirror attached to spot-light the statuette.
Right, Lamp shade beside fireplace showing the opening for the lighting of the picture in Fig. 3.

Here again the effect is a striking improvement. The picture, which was formerly altogether too dull in the evening, now takes its proper place in the decorative scheme of that part of the room.

The conditions which called for intensified local lighting in these cases are, first, the diffused character of the general lighting, which tends to undesirable uniformity of brightness; and second, the low intensity of illumination, as compared to

daylight, with the result that many objects which are chosen for their daylight appearance lose their appeal by night. These conditions are very general in modern artificial lighting and suggest the desirability of giving some study to the best means for relieving them by the introduction of well-considered local or spot-lights.

Lighting Fixtures

There is one thing that architects, builders and people who have houses built for speculation seem to forget, or rather ignore entirely, and that is the lighting fixtures. Oh, yes, they put fixtures in the houses, but only for the same reason that they put in windows The trouble is, while they usually display some intelligence in locating the windows and determining the number and size of them, so far as the law makes this work mandatory, lighting fixtures seem to be without the pale of the law and are put in just as a matter of course, fearful, perhaps, that the owner could not get a tenant if he omitted such a trifle.

Apparently it makes no difference how large a room may be or how high the ceiling, you will find a common gas pipe stuck through the center of the ceiling just far enough to permit the gas to be lighted without setting fire to the place. Possibly it is a combination fixture—they are quite common these days. In such a case it is the same, with the gas jet sticking off at one angle and the electric bulb at another. These are so high that the average woman has to use a chair or a taper in order to turn on the light. No effort is made to place the fixtures where they will be of the greatest service.

In designing a house much effort is given to economizing on space and arranging every room so as to provide the greatest amount of space and comfort. The aim is to get as much room as possible with the expenditure of the least possible material in order to secure the greatest amount of interest on the investment. Yet, where is the person who builds, unless it be for his own occupancy, who takes any thought of providing sensible lighting fixtures? It need not be a question of cost. The same fixtures commonly used now could be placed more advantageously and dropped a foot lower so the women of the house could reach them.

Manufacturers of fixtures endeavor to educate the public, but so far have had limited success with architects and builders. There are medium priced fixtures on the market that are pleasing to the eye, and if some effort was made to show how fixtures should be placed to render the greatest amount of light, it would pay not only the manufacturer but also the landlord, for the tenants would feel more satisfied. They would be getting more light units at a less expenditure of money.—Exchange.

The Broadened Field of the Illuminating Engineer

A well-known consulting illuminating engineer in advising the management of a large office building on matters pertaining to its lighting, recommended the use of certain paints and paint surfaces on the walls and ceilings of this building. On actual tests made, it was shown that a change from the colors that had been used would result in increasing the effective lighting thirty per cent and reduce the charges for energy $14,000 per year. By many, the illuminating engineer is not expected to go beyond the lamp and reflector. The real illuminating engineer, however, is concerned with everything having to do with the production, distribution and use of light. For a strictly utilitarian proposition, an investigation of this kind is well worth while. It should be added that the old walls were not black, nor are the new walls recommended to be white.

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Lighting the San Francisco City Hall*

By LEO J. MEYBERG.

THE problem of the artificial illumination of public buildings always has been and very likely will continue to be a source of considerable worry to those whose efforts are bent on seeing their work completely and absolutely satisfactory, not only to themselves but to the general public as well.

The illuminating of public buildings is to a certain extent not a very difficult proposition, inasmuch as at the present time, particularly within the last ten years, this science has developed to such an extent that there are in the field a great many competent engineers who have specialized on this work, and whose services are always at the command of the architect. But while the matter of the quantity and quality of the light can be determined with absolute accuracy, the real difficulty is found in supplying the fixtures to support or suspend the source of light. The fixture, either suspended from the ceiling or as a bracket or standard, is really a part of the furniture of the building and a very conspicuous part, and where there is any lack of harmony between a fixture and its general surroundings the unsightly contrast strikes us at once.

We have always with us glaring examples of how the wrong lighting fixtures can mar an otherwise beautiful building, but one of the most conspicuous examples in the West, if not in the entire country, of an installation of lighting fixtures as they should be is to be found in our new City Hall.† Anyone, layman or loiterer, is at once struck by the originality and beauty of the designs, and close inspection will reveal to those interested a perfection of execution in the details that reflects the highest credit on both designer and manufacturer. The poet, the painter and the sculptor dream their dreams, and with their own hands make them permanent; the architect also dreams his dreams, but other hands must endeavor to interpret them, and that architect is fortunate indeed whose paths lead him to men who have the mind to comprehend and the hand to execute, not what they want but what he wants.

There is no question but that the architects have succeeded in having their ideas executed to their entire satisfaction in the installation of lighting fixtures in this beautiful building.

Space hardly permits a detailed description of the fixtures, but attention might be called to some of the most conspicuous examples of the ornamental fixtures. The exterior, crosier shaped standards, support a beautiful lantern, in itself a work of art, and the soft light of the frosted lamps as seen through the crystal panels of the lanterns give a dignified effect harmonizing with the exterior of the building. The crystal stalactites suspended by chains in the entrances, though inconspicuous during the day, shed a soft radiance when illuminated and bring out all the beauty of their surroundings.

The rotunda, the wonderful rotunda, is lighted by four thirteen-light standards, marvels of grace and beauty—four wondrous gems in a wondrous setting. Each standard is set off with thirteen cut crystal globes, each enclosing a frosted lamp which when lighted will, coupled with the brackets in the upper corridors, illuminate the rotunda with a soft restful light that will bring out the carvings in the granite and the detail of the ceiling. There is one of these standards placed in each corner of the rotunda. As one stands at the foot of the stairs, the full beauty of the stairs and walls of the rotunda is revealed. Looking up to the mezzanine corridor entrance to the Supervisors' chambers, the full beauty of the lighting fixtures installed on this floor is apparent. On each side flanking the entrance are two standards, and looking through the archway there hangs from the well on the third floor a lantern, and on each corner of this well are four brackets. The lantern is indeed a work of art, and the time alone spent modeling this fixture was over six weeks. The corridors on the main floor and the rotunda are lighted by large bronze brackets, the weight of each one being over forty pounds, each arm being surmounted by a clear-cut stalactite inside of which is a frosted 100-watt Mazda lamp.

The Supervisors' chambers are lighted by eight sixteen-light bronze candelabra chandeliers, which in design and manufacture are beyond criticism. Each fixture has sixteen 40-watt round frosted lamps, and these are a finishing touch to a very wonderful room.

Both architect and contractor have worked indefatigably to make this installation of lighting fixtures a dignified and harmonious finish to the building, and anyone who takes the time to study the harmony between the fixtures and the building will agree that their efforts have been successful.

*Fixtures in the building were modeled, furnished and installed by the Leo J. Meyberg Company. Moulds for the glassware, and the glassware itself, were manufactured under their direction by the Gleason-Tiebout Glass Company, Brooklyn, N. Y.

†See illustrations on page 74.

Mabro Used on New City Hall

Magner Bros.' "Mabro" stipple paint was used throughout the new San Francisco City Hall and is a good specimen of the superior results which can be secured by using this specialty.

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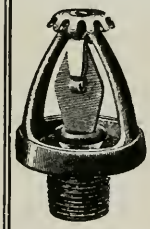

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The Contractor

HIS TROUBLES AND SOME OTHER THINGS

He That is Fond of Building

By NOBLE FOSTER HOGGSON.

"HE that is fond of building will soon ruin himself without the help of enemies," was the confident declaration of Plutarch, while Kett, who proves himself to have been an ardent preparedness advocate, cautioned: "Never build after you are five-and-forty; have five years' income in hand before you lay a brick, and always calculate the expense at double the estimate." Good advice, or bad?

Philosophers and jokesmiths of all ages have had their various says about the man who puts his trust in fate, leaves his safe open and plunges blindly or otherwise into a building operation. Today in the comic weeklies and in the dailies his troubles are made light of and he is as prolific a source of cheerful ridicule as a certain justly well known make of motor car.

A thing is tragic or humorous according to the point of view. The man who sits on a tack does not share the onlookers' amusement. In fact, he is not only pained at his own misfortune, but he is pained because he occasioned someone else to find a degree of pleasure at his unseemly plight. Now it is perfectly safe to make this positive statement in this connection: The person who witnessed the other's unfortunate encounter with the tack never deliberately sits on the same tack himself; in fact, he is particularly cautious about sitting down anywhere soon thereafter without looking for a tack. Nor is this an indictment of tacks. Tacks serve a very real and useful purpose in this world, but they have their place, which is not in localities where they may be sat upon.

Now let us apply the principles of the tack episode to building. The man did not sit on a tack. He built a house or a skyscraper or a garage—it does not matter much—and when he finished he discovered, among other things, that he was called upon to pay a great deal more money for the completed product than he had expected to pay. He had come in contact with a pretty big tack, and, for people who find amusement in such things, he presented a most ludicrous figure, a subject for much hilarious laughter. He told about his experience and he wrote about it, but he could not produce the tack to prove his case, so the people who laughed at him did not profit by his lesson, and they went about building in the same way he did. They regarded his warnings as a "wet paint" sign. They had to rub their fingers upon the painted surface to see if it had not really dried and the sign left on as a sort of April fool joke.

It narrows down in the final analysis to a matter of ego. The man who intends to build will not take heed of the man who has had an unfortunate experience in building, because he feels that he is shrewd enough to look after his own interests and safeguard his own rights, notwithstanding the fact that he is engaging for the time being in a business enterprise that is totally foreign to him. Benjamin A. Howes, in his book on "Building," recounts a typical case:

> "Once upon a time there was a famous author who wanted to build a house—to build a home, as the real estate advertisements put it. He had plans drawn by an architect and got bids for its construction in permanent and fireproof material. 'But that's half as much again as I have allowed!' he cried. So it was decided to build in cheaper construction and 'by day's labor,' with the direct supervision of the author's family thus saving the contractor's profit. When the house was finished—and it was very attractive, even though it would never be a family homestead, because it would hardly last long enough for that—and the famous author was happily ensconced, he was asked, 'And was the house built for your original allowance?' 'Half of it was!' replied the famous author."

When a man sets out to buy a five-cent loaf of bread he gets a loaf of bread for five cents. When he sets out to build a residence for twenty-five thousand dollars there are no good reasons why he should not be able to build it for that amount.

The man who is going to build should definitely know two things:

First—Exactly what he is going to get for the price he expects to pay.

Second—The outside limit of cost for the completed structure.

To demand these safeguards is perfectly fair and natural. In every phase of business today, except building, one knows in advance just what the cost of any specified piece of work will be.

In a building operation, as ordinarily conducted, no one participant is in a position to guarantee the work of all participants. The responsibility of the various contractors who execute different portions of the work is individual; the responsibility of each ends with the completion of his particular part; no one of them is in a position to guarantee anything beyond his own share or detail of the whole operation.

Usually the owner proceeds without adequate guarantee of the limit of cost; he does not protect himself against errors in plans, specifications and estimates. If the discovery of errors necessitates extra charge later, he must pay them; if such errors go undetected his building may be defected and he may suffer from its diminished equity and earning power; if the plans and specifications are slighted in execution, if mismanagement occurs, if the building is not ready to earn income when expected, he must suffer loss.

A watch, an automobile, an engine or a printing press consist of hundreds of parts, assembled, adjusted and harmonized, by a single responsibility, to produce the finest unit, the maximum of effectiveness in every phase at the minimum of cost. It is the same with a building. All the separate branches and processes of a building operation require similar assembling, adjustment, and harmonizing. A building is to be considered a building, in its truest sense, only when it is complete in every detail, ready for occupancy, in perfect order to answer all the needs, and to fulfill perfectly the purposes for which it was designed. A building operation may be considered successful when seven essential elements join to that end, in perfect harmony. The all-important units which combine to constitute the total of a magic seven are arrangement, decoration and furnishing, appearance, cost, stability, speed, service. The making of the architectural plans is merely the first step, the construction is second; equipment, decorating and furnishing, other steps or processes. All are elements in the final unity. They must be considered together in the beginning, prior to the time of actual work.

Nothing concerning a contemplated building should be definitely decided until all things concerning it are ready for decision. To prevent excessive expenditure on one part, and inadequate expenditure on another, work should not be begun until all features are brought into proper relation.

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The credit for Hollow Metal Doors and Trim belongs to Dahlstrom. That we truly originated and perfected and have consistently produced the highest grade of hollow metal interior trim for buildings is not an exaggeration, but an established fact.

Sometimes, in fact quite frequently, we are told: "Cut your estimate and the job is yours!" We are always willing to re-figure and to co-operate with the Architect, Owner and Contractor in an endeavor to lessen cost or to meet a particular requirement, but we are **not** willing to cut an estimate merely for the commercial transaction of signing a contract. Dahlstrom Quality has always been rigidly maintained and this quality will not be lowered for the purpose of securing an order by meeting the figure of a competitor whose product is decidedly inferior.

THE DAHLSTROM PRODUCTS are made right in every particular, and prove not only a source of satisfaction from the viewpoint of excellence in unequaled finish, but the added and greater service of standing up under the severe tests of the two greatest destructive forces known to mankind — **FIRE** and **TIME.**

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Use of Hardwoods in Home-Building.

The general use of hardwoods in home-building is having a wonderful increase on the Pacific Coast. Hardwood for interior trim, floors, doors, etc., etc., is becoming more popular every day. The public is beginning to realize that hardwood is not a luxury but an economical investment, and the continual demand for hardwood is due, in no small part, to the concerted action of the hardwood dealers around the San Francisco Bay. They have all joined in fostering the use of hardwoods and have issued an interesting booklet entitled "A Treatise on Hardwoods for Interior Finish," which shows specific comparisons in cost of hardwood as against softwood, carpet, linoleum, etc. Hardwood proves the more economical.

* * *

The shipbuilding industry is on the crest of an enormous wave of activity. Wooden vessels are being built all along the coast, wherever facilities are available, and the demand for all hardwoods occasioned by this industry has brought about new conditions. Eastern oak timbers for rudder stocks, stern posts, etc., were almost entirely supplanted fifteen or twenty years ago by Australian ironbark, but the scarcity of bottoms to transport, and of Australian labor to get out the timber, has caused a corresponding decrease in the stocks of Australian ironbark in this country and American oak has again come into the field and is proving very successful; 16x18s and 18x20s, 30 to 40 feet long, are obtainable in American oak at the same price as ironbark, and their delivery can be depended upon, which cannot be said of Australian woods. California laurel, while not obtainable in such long timbers as ironbark and American oak, is used to a very great extent for friction surfaces.

* * *

The hardwood dealers have been forced to listen to such continual and general complaint as to the poor qualities of Japanese oak when made up into flooring or trim that many of them are declining responsibility for the wearing qualities of Japanese oak flooring or interior finish. This wood, being soft and brashy, cannot be expected to hold up like the genuine American oak.

The use of California laurel for bridge planking is becoming quite general. The planking on Webster street bridge, between Oakland and Alameda, which was the first instance of laurel being used for this purpose, was laid several years ago and shows practically no signs of wear. This is also the case with the Petaluma drawbridge and the Fourth street bridge over the San Francisco channel. The economy of laurel for this purpose is indisputable.

* * *

American walnut is coming back into fashion for furniture and interior trim and Southern red gum (known sometimes as satin walnut) is having an enormous call on the Pacific Coast. As a suggestion for a harder and higher class cabinet wood than Southern red gum, and a lower priced wood than American walnut, genezero or jenisero presents itself.

High Prices Stop Building

How speculative builders feel about the disposition to jump costs in certain lines of material is shown by the reluctance with which investors approach large work in this particular field. A builder who contemplated the erection of a twelve-story apartment house in New York City, but who has decided to wait until prices get back to normal before going ahead with the project is quoted as saying:

> It is a cold fact that it costs twenty-five per cent more to build now than it did a year ago. Do you know that last year I paid but $35.37½ per ton for structural steel at tidewater and that this year the price asked is $70 to $75? Twenty per cent of the cost of a modern building goes into the steel frame. Take a building requiring 4,000 tons at $80 per ton, and you have a charge of $320,000 for the structural steel alone. Then there is the iron and steel going into the piping for heating, plumbing and lighting, and into stairs, elevator enclosures, reinforced concrete floors, and metal-covered trim, not to mention innumerable other things made of metal.
>
> I want to send one thought home, that it is my opinion there is no justification for the current prices of most of these materials, especially steel, because it is the result of pooling among the producers.
>
> It would have been a wonderful year for building but for that. Renting was never better. We shall wait until prices return to a moderate basis. In the case of a million-dollar building going ahead now would mean an extra cost of $250,000. This would be lost when prices returned to a normal level. Besides, nobody will buy property improved at such an extra cost.

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Brick Styles Change Frequently

One of the perplexing problems of the building material dealer is to meet the demand for the various styles of face brick. It has often been said that the styles and colors of building brick change in any given market as often as do the styles of a woman's clothing.

The reason for these changes is easily discernible and can be attributed to aggressiveness on the part of architects, contractors, brick dealers or brick manufacturers. In cities where retailers have made a specialty of boosting a particular style of brick, evidences of their work are to be seen in buildings throughout the town. Because of this fact, every wide awake building material dealer should carefully study the various styles of brick offered by the manufacturer and place such brick in stock as he has absolute confidence in and for which he believes he can create a demand. When such selection is made a systematic campaign of educating the public through the newspapers and by other means should be adopted. The results will speak for themselves.—Rock Products.

Something Red, Anyway

An Irishman recently went before a judge to be naturalized.

"Have you read the Declaration of Independence?" the court asked.

"I hov not," said Pat.

"Have you read the Constitution of the United States?"

"I hov not, yer honor."

The judge looked sternly at the applicant, and asked:

"What have you read?"

Patrick hesitated but the fraction of a second before replying: "I hove red hairs on me neck, yer honor."—D. C. C., Meadow Creek, Wash.

Cost of Highways

The public is to know exactly how the $18,000,000 highway bond issue was expended, according to an announcement made by Austin B. Fletcher, engineer of the State Highway Commission, who is drafting a report to answer newspaper and other attacks.

The worst complaint comes from Humboldt county, where the charge has been made that the county has failed dismally in an effort to get data on highway construction.

Government to Spend $10,000,000 on Good Roads

One of the provisions of the Federal aid road bill which was signed by the President on July 11th appropriates $1,000,000 a year for ten years to be spent by the Secretary of Agriculture for the construction and maintenance of roads and trails within or partly within the national forests.

The bill provides that, upon request of the proper officers of the States or counties, the money shall be used for building roads and trails which are necessary for the use and development of resources upon which communities within or near the national forests are dependent. The work is to be done in co-operation with the various States and counties.

California Federal Buildings

California has not been overlooked by Congress, which has approved appropriations for new Federal buildings to the amount of $1,625,000. Of this sum $650,000 is for a new postoffice building at Oakland and $600,000 is for the new Marine Hospital in San Francisco. Following is a summary of the bill:

San Francisco Marine Hospital	$600,000
Oakland postoffice	650,000
Sacramento addition to Federal Court	50,000
Venice, site for postoffice	20,000
Santa Monica, site for postoffice	20,000
Placerville, site for postoffice	10,000
Susanville, site for postoffice	10,000
Petaluma, postoffice	50,000
San Bernardino, postoffice	70,000
Palo Alto, site for postoffice	15,000
San Mateo, site for postoffice	15,000
Modesto, postoffice	65,000
Redlands, site for postoffice	50,000
San Jose, postoffice additions	15,000

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Building and Industrial Notes

Fine Interior Woodwork

The Home Manufacturing Company, cabinet makers, of 543 and 545 Brannan street, San Francisco, is winning golden opinions on account of its original designs and superior workmanship in fine special furniture and office fittings recently completed. Among these may be mentioned the two Period Rooms (Louis XVI and Empire) recently executed from their own designs for the well-known jewelry house of Houston, Dillman & Co., Post and Stockton streets, San Francisco; also the altar furniture and railings of St. Luke's Church, Van Ness avenue, San Francisco, from designs by Vickery, Atkins & Torrey. It has just completed the cabinet work for the Pacific Mail Steamship Company (Grace & Company), also that of the Hartford Insurance Company. Special mention should be made of the counters, tables and fixtures (also the white floor in Bremerwarra, inlaid) for the extension to Foster & O'Rear's candy store on Grant avenue, San Francisco.

Sloan Valves in City Hall

In line with the general excellence of the material employed in the construction of the new San Francisco City Hall, it was decided by the architects, Messrs. Bakewell & Brown, and their engineers, Messrs. Hunter & Hudson, to specify the Sloan Valve Company's Royal flush valve as being best suited for the exceptional service that would prevail in the City Hall.

Though competition for this business was very keen at the time, the Sloan Royal valve, after an exhaustive series of practical tests, proved much superior to the substitutes offered and accordingly this valve was installed.

There are about 245 Royal flush valves in the building constantly in use on variable water pressures without the necessity of regulation or adjustment to meet the changing conditions, and in general giving perfect satisfaction.

Paving Brick Again Popular

The California Paving Brick Company, Oakland, has supplied vitrified paving brick for the United Railroads of San Francisco, this product having proved highly satisfactory for paving between street car tracks. The city of Oakland is also about to use a large quantity of "pavers" on several city streets as an experiment. F. A. Costello, president

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of the company, says that they can manufacture the highest grade paving brick from their shale mined at the Calaveras county holdings, and put them upon the San Francisco market much cheaper than would be the case with paving brick made in the Northwest. The company expects to operate on a much larger scale in the near future.

Local Tile Situation

At a recent meeting in San Francisco of the Northern California Mantle and Tile Dealers' Association the matter of improving the tile situation was taken up. A resolution was passed urging the members to put in no lump sum bid to any contractor or architect while the job was being figured, in cases where more than one thousand feet of tiling were to be used. After the contract has been awarded, lump sum bids may then be given to the successful contractor. The officers elected by the association were: Charles Halloway, Jr., president; G. McElhinney, vice-president; F. T. Connor, secretary-treasurer; and Ed. Hulse, Thomas F. Rigney and Carl Ericksen, trustees.

Ornamental Brass Iron Work in New City Hall

In the construction of San Francisco's new City Hall the architects and various contractors and sub-contractors were called upon to furnish the most modern and up-to-date equipment and in a great many instances the material required to be manufactured has never been attempted on the Pacific Coast before.

Among the California corporations doing work on this building the West Coast Wire and Iron Works of San Francisco constructed for the Capitol Sheet Metal Works, also a California corporation, in connection with their contract for metal furniture, all the tellers' cages and runways in the Treasurer's and Tax Collector's departments.

This work was all baked enameled and was the first of its kind attempted in this State. This portion of the contract being successfully completed spelled a birth of the new Pacific Coast industry, as prior to this time all work of this nature had been manufactured in the Eastern States. In addition to this work, there was a great amount of brass railing used in the Supervisors' committee rooms, Auditor's department and Election Commissioners' office.

The high class construction of this building naturally meant a very rigid inspection on all work and to the gratification of the manufacturers all work was passed without one single objection.

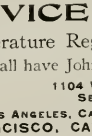
New Ventilating System

Professor E. P. Lesley of the Department of Mechanical Engineering at Stanford University has just completed the plans and specifications for a new system of ventilation for the Emporium building in San Francisco, including the installation of air-pumping fans and air washers. The Emporium is doubling the selling space of its basement salesrooms and is adding a large area of floor space to its third story, so that the old ventilation and air supplying system would have been inadequate. Professor Lesley was called in to work out an entirely new and improved equipment.

Mullen Company's New Work

The Mullen Company have been awarded the contract for all special furniture in the new San Francisco public library. They are also fitting up the Felix Kauffman fur store under the Hotel Stewart. Their cabinet work in the new City Hall includes the flat top desks for the judges of the Supreme Court, all desks for offices of the Auditor, fancy glass top octagon lobby desk for the Treasurer, complete fixtures and fittings of the chemical laboratory, eighty steel lockers for the Recorder's department, and various special furniture for all departments of the building.

JOHNSON SERVICE CO.
The Johnson System of Temperature Regulation
All important rooms in the new City Hall have Johnson control
629 LUMBERMAN'S BLDG. PORTLAND, OREGON
1104 WHITE BLDG. SEATTLE, WASH.
600 CITIZENS BANK BLDG., LOS ANGELES, CAL.
149 FIFTH ST., SAN FRANCISCO, CAL.



The Fallacy of "Direct Returns"

[Printer's Ink.]

Out of the morning's mail we cull the following interesting, not to say affecting, document:

Montclair, N. J., June, 1916.

To Alumni and Friends:

Years of experience have demonstrated that newspaper and magazine advertising results in needless expenditure. This year we did not register a single student as the result of our advertising campaign; in spite of this, our enrollment is the largest in our history.

For many years, practically all of our new students have come on the recommendation of undergraduates, alumni and friends. We find that those who come to us in this way are apt to be a better type of boy than those few who enter through the medium of advertising.

We feel that the time has come when admission to the school should be conditioned upon the recommendation of the undergraduates, alumni and friends. The board of trustees has, therefore, decided to withdraw from public advertising. We feel sure that we may depend upon your cordial co-operation in placing Montclair Academy among the schools which do not find it necessary to advertise. This explanation is sent to make clear the change in our policy.

By order of
BOARD OF TRUSTEES, MONTCLAIR ACADEMY.

Far be it from us to quarrel with an institution which, after years of needless expenditure for advertising, has attained the largest enrollment in its history and has decided to be advertised only by its loving friends in the future. "Will you kindly get busy," it says to the loving friends aforesaid, "and prove that we don't need to advertise. This explanation is sent because we aren't going to have the benefit of that useless expenditure any more, and the future is up to you."

Not that we think the lapse of Montclair Academy from the advertising ranks is a serious matter. We don't. But the type of reasoning set forth above sometimes leads larger advertisers to similar conclusions, with results which are disastrous. Direct, traceable returns are still looked upon in many quarters as the one conclusive test of the value of advertising. "We have not sold a dollars' worth of goods as the result of our advertising; in spite of which our sales are the largest in our history. So for the future we shall depend upon our good friends in the trade to push our goods."

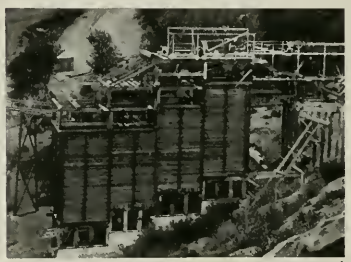
"We are advertised by our loving friends' 'was a grand good slogan because its friends were never allowed to forget it. A satisfied customer is the best advertisement only so long as he stays satisfied and bears the product in mind. Oftentimes there is no greater service advertising can do than to keep the friendly spirit alive in those who already know the merits of the goods.

Kellastone Under New Management

Kellastone, the imperishable stucco, is now being distributed in San Francisco and the bay section by the Blake Plaster Company, T. H. Blake, general manager, with head offices in the Bacon building, Oakland. Kellastone has heretofore been handled in this section by the West Company, which latter firm will become the manufacturers. They have a good sized plant in West Oakland. Kellastone is said to be especially adapted to exterior plaster work and, unlike cement, will not crack or expand.

Stockton Apartment House

Franklyn Warner, San Joaquin building, Stockton, has completed plans for a $25,000 apartment house to be erected on the northeast corner of Minor avenue and Grant street, Stockton, for George E. Ball of that city. There are to be fourteen two and three-room apartments, with a large store on the ground floor.



Part of an M & G Rock and Gravel Plant

Let M & G design and equip your rock or gravel washing and screening plant and you will be assured of a successful installation.

M & G experience in this line is the broadest and M & G facilities for doing the work are the best on the Pacific Coast.

Meese & Gottfried Company

ENGINEERS AND MANUFACTURERS

CONVEYING, ELEVATING, SCREENING AND MECHANICAL POWER TRANSMITTING MACHINERY

San Francisco
Portland Seattle Los Angeles

The New "Brack Shops" Building in Los Angeles. Interior partitions throughout are of Buttonlath.

Thirteen-Story Building with Buttonlath Partitions

THE photograph on this page shows the new thirteen-story building in Los Angeles which has been converted into a colony of retail shops known as "The Brack Shops." It is a rather unique enterprise, comprising eighty-four complete shops under one roof, with luxurious lounge, reception and dressing rooms and each floor having a drawing room promenade fronted by glass-enclosed shops. The exterior of the building is of white tile with ironwork painted a grass green. The windows are latticed, bordered and ornamented with flower boxes and other floral decorations, and there are brilliant electric lighting effects.

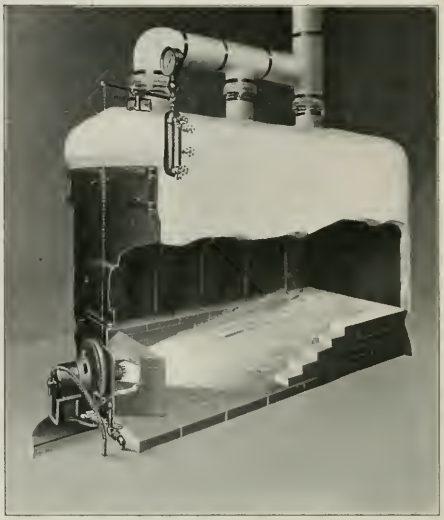
The interior plan provides for seven units of space on each floor, the individual shops being separated from each other by partitions and each with its French glass doors fronting a handsomely furnished reception or lounge room, offering all the conveniences of a club.

The partitions throughout the building on all floors have been built of Buttonlath—the new lathing material which is creating so much comment in architectural and building circles. Being fire resistant to an exceptional degree, as well as water proof, and having great sound-deadening qualities, it makes an exceptionally good material for the purpose. Buttonlath is also used on the top floor of the building, which is occupied by a tea room, card room, private dining rooms and women's exchange.

The Brack Shops are rented to stores at rentals as low as $35 and $50 a month for a single shop and $125 a month for double shop, this price including all service, comforts and conveniences for the shopkeeper and his patrons.

An Improved Rotary Oil Burner

AFTER two years of experimenting, Mr. J. C. Johnson of the S. T. Johnson Company, San Francisco, Los Angeles and Oakland, has perfected an improved rotary oil burner which promises to meet with instant favor from architects, engineers and others who specify or use oil burning equipment. The new Johnson multiple disc rotary burner is said to produce absolutely perfect atomization. The old type burner, with its open cup, afforded but a single surface for throwing the oil. The new multiple disc will throw oil from no less than six lips, breaking it up and giving a perfect mixture. One of the secrets of a satisfactory oil burning equipment is thorough atomization of the oil. The more perfect the atomization the better the combustible mixture and the lower air pressure can be used. With this rotary burner a less air pressure is required than was practical formerly with other types of burners, and this produces a quiet fire and more complete combustion.



The Johnson Improved Rotary Oil Burner.

The new Johnson patent sends the oil supply direct to the atomizer instead of passing through a hollow shaft, consequently there is no packing in the shaft to cause friction.

Already the company is working overtime filling orders for the new burner, which may be used in school buildings, apartment houses, hotels, office structures and residences. Some of the latest installations are the Eleanor apartments on Sixteenth street, San Francisco; two burners in the Hotel Dale, San Francisco; government transport dock No. 1, San Francisco; apartments for Joseph Menard, corner Leavenworth and Broadway; Overlook apartments, at Sixteenth and Market streets; Cogswell school, and apartments of Mr. Brun, 1385 Clay street, all in San Francisco.

The company is also quite busy installing low pressure air crude oil burning apparatus in the following buildings: Red Bluff high school, Lodi high school, Lincoln union high school, Paso Robles school, St. Francis Orphanage, Watsonville; Scottish Rite Cathedral, Sacramento; the Wasserman building, San Francisco; Petaluma high school, Wiltshire Hotel, San Francisco; St. Dunstan apartments, Hotel O'Farrell, Women's Athletic Club building, Washington school, Alameda; Southern Pacific depot, Fresno; St. Germain restaurant, San Francisco Dairy, and many others.

The Johnson Company has just completed making some extensive improvements to its Mission street building, and is now occupying three full floors, with enlarged and well-appointed offices on the ground floor, stock room on the second floor and machine shop on the top floor. The growth of this company has been little less than phenomenal, since in ten years its business has increased more than 200 per cent.

The San Francisco offices and factory of the S. T. Johnson Company are at 1337 Mission street. The Oakland offices and factory are at Grace and Lowell streets. Agencies are maintained as follows:

Thos. Russell, Los Angeles; P. A. Costello, Seattle, Wash.; E. M. Keller, Fresno; Santa Rosa Oil and Burner Co., Santa Rosa; Garden City Oil and Burner Co., San Jose; Sacramento Oil and Burner Co., Sacramento; Schroeder & Hildenbrand, Marshfield, Ore.; Reno Plumbing and Heating Co., Reno; Appling-Griggs Co., Tacoma; C. C. De Marais, Chico; H. S. Gray Co., Honolulu, T. H.; Ingle Mfg. Co., San Diego; Thos. J. Ross, Portland, Ore.

J-M Aertite Boiler Wall Coating

Every engineer who has trouble getting perfect fuel combustion will be interested in J-M Aertite, a new boiler wall coating which has just been placed on the market by the H. W. Johns-Manville Company.

The necessity for an easily applied coating to prevent air infiltration was brought about by the growing realization that imperfect combustion, with its corresponding heat loss, is due to the use of too much air in firing, and particularly to too much air leaking into the boiler. Each crack and crevice in the boiler setting allows air leakage—allows air to mix with the flue gases before perfect combustion takes place and prevents their giving up the maximum number of heat units. Not only this, but the air which leaks in is cold and uses up heat units which should be developing steam. The result is decreased boiler efficiency.

J-M Aertite boiler wall coating, applied to the outside of the boiler wall, entirely eliminates air infiltration. It provides a tough rubbery coating or blanket over the entire boiler setting, which remains tight on account of its adhesive and ductile qualities.

It is easily applied by troweling on the outside of boiler walls. The best results are obtained by keeping the thickness as near one-sixteenth inch as possible.

The quantity required to cover 100 square feet depends upon the number and variety of cracks and the way the wall has been pointed up. For one-sixteenth inch thickness it will take approximately twenty-five to forty pounds per hundred square feet.

Three Acres of Marble Floors in San Francisco City Hall

It is interesting to know that the contract for the interior marble work of the San Francisco City Hall is the largest contract of the kind ever let on the Pacific Coast, amounting to nearly a quarter of a million dollars. There are over three acres of marble tile floors, as well as vast quantities of marble wainscoting, carved stairways, marble pilasters, ashlar walls, etc.

Particular care has been taken in the treatment of the Tax Collector's office and Registration Bureau, the marble used being of a light golden vein color, having a hone finish and embellished with just enough carving and ornamentation to lend tone and richness to the rooms.

This marble work was installed by the Joseph Musto Sons-Keenan Co., whose extensive marble mills are located in San Francisco and Los Angeles. The high class of work executed in this building will stand as a lasting monument to this company's skill and mechanical ability.

Victory for Burned Clay Sewer Pipe

Possibly one of the biggest defeats that burned clay sewer pipe has ever administered to cement was realized recently at Long Beach, Cal., when, after a hot contest between the two materials, lasting many months, the local commissioners, acting upon the city engineer's findings of net percentages on cement and clay petitions, awarded to clay sewer pipe the victory in every lateral, the material for which had remained undetermined. In all of the thirteen districts under consideration, the clay product received the preference by a decisive majority, with the exception of one that went to cement with but a very small plurality.

Frederick Thompson in the Harness Again

The many acquaintances of Mr. Frederick Thompson, formerly sales manager of the Pacific Portland Cement Company and later with the Standard Portland Cement Company, will be interested to learn that Mr. Thompson who recently returned to San Francisco after a year's absence in Mexico, is now in business for himself as broker for some of the big surety companies. He has offices in the First National Bank building.

PAUL E. DENNIVILLE

San Francisco

Decoration Specialist in Plastic Materials

ROBERT TROST PHONE MISSION 2209
General Building Contractor
We Specialize in High Grade Work and Employ Skilled Labor in every Branch of the Building Industry. 26th and Howard Streets SAN FRANCISCO

Atlas Heating and Ventilating Co., Inc.
ENGINEERS and CONTRACTORS
STEAM AND HOT WATER HEATING, FANS, BLOWERS, FURNACES, POWER PLANTS—SHEET METAL WORK
Phone Douglas 378 Fourth and Freelon Sts., Bet. Bryant & Brannan, SAN FRANCISCO.

THE INVINCIBLE VACUUM CLEANERS
Comprise the Largest and Most Complete Line of Vacuum Cleaning Machinery on the Market. They also Stand First in Simplicity, Efficiency and Durability
R. W. FOYLE, General Agent
416 Harriet Street Telephone Park 2667 San Francisco, Cal.

HEATING VENTILATION Automatic Sprinkler Systems FLOOR AND WALL TILING PLUMBING SHEET METAL WORK
SCOTT CO., Inc.
SUCCESSOR TO JOHN G. SUTTON CO.
243 MINNA STREET SAN FRANCISCO

THE HOOSIER CABINET OLDEST — BEST MOST ECONOMICAL
1000 San Francisco Apartment House Kitchens have Hoosier Cabinets Installed
THE HOOSIER KITCHEN CABINET STORE
1067 MARKET ST. (Opp. Jones St.), San Francisco (O. K. BROWN, Mgr.)

SLIDING DOOR HANGERS
FOR ALL CONDITIONS
THE McCABE HANGER MANUFACTURING CO., NEW YORK

Mrs. H. C. McAfee, *Decorator*
offers her services in collaboration with architects and owners, for plans, suggestions, details, etc. of
DECORATIVE FURNITURE, LAMPS and SHADES, GARDEN POTTERY and ACCESSORIES
Phone Garfield 1627 504 SUTTER STREET, SAN FRANCISCO

MULLEN MANUFACTURING CO.
BANK, STORE AND OFFICE FIXTURES—CABINET WORK OF GUARANTEED QUALITY—BAR FIXTURES DESIGNED, MANUFACTURED AND INSTALLED
Telephone Market 8092 Office and Factory: 64 Ralsch St., Bet. 7th and 8th, San Francisco

Brininstool Company Expands

AN announcement of considerable importance to architects and builders generally is made by the Brininstool Company of Los Angeles, manufacturers of the well-known gloss and flat wall paints—San-a-Cote and Vel-va-Cote. Mr. J. L. Brininstool, whose photo appears herewith, is now permanently located in San Francisco with a full stock of the well-known Brininstool line of paints, ready to supply the demands from the bay territory.

Mr. J. L. Brininstool

The increased call for Brininstool products renders this step necessary and the company feels that the business will warrant having a representative on the ground all the time. Mr. Brininstool is a cousin of F. M. Brininstool, the president and directing head of the Brininstool Company, and is well known in San Francisco, Oakland and around the bay. His assignment to the San Francisco field exclusively will undoubtedly have the approval of architects and the trade in general.

The success of the Brininstool Company in placing their lines has been phenomenal. They now have stock of goods all over the coast, having recently entered Oregon, Washington, Utah, Idaho and Montana. The San Francisco stock will be carried in the Haslett warehouses and will include Vel-va-Cote, San-a-Cote, shingle stains, enamels, interior stains, linoleum varnish, etc.

KOHLER
The factory, the product and the trade-mark
Kohler, Wisconsin, where KOHLER WARE is made, is a community which is devoted solely to this industry.
Its single activity is the production of enameled plumbing ware of one quality—the highest.
KOHLER WARE
is notable for its beauty
Every KOHLER bathtub, lavatory and sink has the trade-mark KOHLER in faint blue in the enamel.
Architects specify KOHLER WARE and purchasers choose it with full confidence of its superiority
KOHLER designs are modern and hygienic. The beauty of KOHLER WARE is enhanced by the clear white enamel.
Write for a free copy of our new book "KOHLER of KOHLER," which contains a full description of the popular "Viceroy" one-piece built-in bath.
"It's in the Kohler Enamel"
KOHLER CO.
Founded 1873
Kohler, Wis., U.S.A.
BRANCHES
Boston New York Philadelphia
Pittsburgh Chicago Atlanta
Detroit St. Paul San Francisco
St. Louis Houston Denver
Seattle Los Angeles London
Fillmore Lavatory
"Viceroy" Bath Plate V-12 A
(Patent Applied For)
KOHLER

Notable Buildings Wired by the F. E. Newbery Electric Company

The above buildings were all wired by the F. E. Newbery Electric Company, Lick building, San Francisco. They represent some of the largest permanent structures, both public and private, erected in San Francisco and Oakland in the last three years. Their total value may easily be estimated at more than $6,000,000, the City Hall and Civic Auditorium alone representing an expenditure of more than $4,000,000. Following is the key to the buildings as numbered:

1. Thomson Building
   Reed & Myer, Architects
2. San Francisco City Hall
   Bakewell & Brown, Architects
3. Home for Aged, Oakland
   Leo J. Devlin, Architect
4. Clift Hotel
   G. A. Applegarth, Architect
5. Hobart Building
   Willis Polk & Co. Architects
6. 1st Trust and Savings Bldg.
   L. B. Dutton, Architect
7. Federal Realty Building
   B. G. McDougall, Architect
8. Civic Center Auditorium
   Myer, Reed & Howard, Arc'ts

A $60,000 Plumbing Contract

One of the largest and most exacting contracts to be carried out in the new San Francisco City Hall, which is so extensively illustrated in this issue, was for the plumbing, the installation of which consumed nearly two years and represented an outlay of over $60,000. The fact that the entire job—plumbing and sewering—was done under a single contract and without hitch or delay, speaks well for the efficiency of the contractor, Alex. Coleman, and stands out as a striking example of modern methods of contracting. Old timers will recall that no less than eighteen different contracts were let for plumbing the old San Francisco City Hall, and even with the letting of all these contracts the work was at no time pronounced complete.

Some idea of the size of Mr. Coleman's contract may be had from the statement that over 649 fixtures had to be installed and connected—the list including basins, toilets and urinals of the most approved designs and complicated patterns. Eighty-eight separate leader outlets had to be provided just for properly draining the great dome. Much skill was required in working out this vast system of drains. Mr. Coleman also had charge of the installation of all piping for the fire system, extending from basement to roof. A double system of sewerage was put in to take care of both the storm and chemical drainage.

Crane and Pacific fixtures were used to a large extent.

An Artificial Stone Expert

Paul E. Deniville, whose decorative plaster and artificial stone work in the new San Francisco City Hall has received so many words of high commendation, is also the successful contractor for similar work on the new San Francisco public library. Mr. Deniville came to San Francisco under an engagement with the P.-P. I. E., where he held the official position of supervisor of texture and modeling. Mr. Deniville was formerly engaged in the hydraulic composite stone contracting business in New York City, where his concern was known as the Deniville H. C. S. Company.

He did the interiors of the Pennsylvania depot, New York, the Manhattan Opera House, New York, new Municipal Building, New York City, Empire Theater, New York City, besides many high-class residences, including those of Messrs. William Rockefeller, P. A. P. Widener, William L. Elkins, Robert Goelet, Orme Wilson and General Howard Carroll. Mr. Deniville did also the interiors of the Central Union Station, Ottawa, Canada, and the Windsor Station, Montreal.

Mr. Deniville will probably take up his permanent residence in San Francisco, if business conditions continue favorable.

Stained with Cabot's Creosote Stains (bungalow-brown walls, moss-green roof). Clinton P. Shockley, Architect, Waterloo, Ia.

CABOT'S CREOSOTE STAINS

Preserve Your Shingles — Rich, Velvety, LASTING Colors

You are sure of beautiful coloring, durable wearing qualities, and thorough preservation of the woodwork if you insist upon CABOT'S STAINS. Their colors are the strongest and finest natural pigments, ground in pure linseed oil and mixed in specially refined Creosote, "the best wood preservative known." They will not wash off or blacken, and are the only stains that are not dangerously inflammable.

Quality Proved by 30 Years' Use — The Original Shingle Stains

You can get Cabot's Stains all over the country. Send for samples and name of nearest agent.

SAMUEL CABOT, Inc.,

Mfg. Chemists, BOSTON, MASS.

Pacific Coast Agents

S. W. R. Dally, Seattle and Tacoma
Pacific Building Materials Co., San Francisco
Timms, Cress & Co., Portland
Mathews Paint Co., Los Angeles

Japanese Gateway at Napanoch, Stained with Cabot's Creosote Stains. Olive B. Sarre, Archt.

When writing to Advertisers please mention this magazine.

Monson Bros. Do Good Job

Monson Bros., who did the carpentry work and the rough and finish mill work on the new San Francisco City Hall, are receiving many compliments for the excellence of their workmanship. This was one of the largest contracts taken on this building, the figures running to more than $200,000. The work was started very soon after the contract was signed and was completed in record time. This firm operates its own planing mill and was therefore in a position to turn out the millwork quickly and in splendid condition. All the interior trim is oak. In finishing the interior, particularly the immense dome, it was necessary to construct a vast network of scaffolding. This was erected and later taken down with such skill that not a particle of damage was done to any of the finished work and not a single accident was recorded.

A Satisfactory Screen

Hipolito window screens are being used in San Francisco and the bay cities more extensively than ever before, due, first, to the improved qualities of the product, and, second, to the aggressive handling of the article by Messrs. Simpson & Stewart, who are now sole factory distributors in the Northern and Central California territory. Their headquarters are in the Dalziel building, Oakland. Besides Hipolito screen doors and window screens, which are manufactured in Los Angeles, Messrs. Simpson & Stewart are handling for the same company its metal window screens, disappearing roller screens, sunlight shade adjuster and portable cottages and garages. The Hipolito goods are specified in practically all the California State work, George B. McDougall, architect. Two jobs are now under construction, the Napa State Hospital and Eldridge State Hospital additions. A practical display of screens may be seen at the Building Material Exhibit on the third floor, 770 O'Farrell street, San Francisco.

Following is a list of recent installations of note:

Alameda County Infirmary, C. P. Weeks, architect, San Francisco; Hipolito screens.

Detention Home, Alameda county, Henry Meyers, architect, San Francisco; Hipolito screens.

Residence for C. C. McLenegan, B. McDougall, architect, San Francisco; Hipolito screens.

One hundred thousand dollar residence for Miss J. Alexander of Oakland, C. W. Dickey, architect, Oakland; roll screens, Hipolito doors, Jamestown metal screens.

Mt. Zion Hospital, San Francisco, Hipolito screens.

German Hospital, San Francisco; Hipolito screens.

Sacramento Country Club, Sacramento; Hipolito screens.

Residence of Mrs. Hiram Johnson, Jr., San Francisco; Hipolito screens.

Hipolito screens installed in eight large apartment houses of Sommarstrom Bros., Oakland; Richardson & Burrell, architects.

Hipolito screens installed in Sydney Newsom's own residence in Oakland.

Hipolito screens installed in five-story apartment house for Roger Coit, Oakland.

There are many other large jobs under way, indicating that a large number of architects throughout the State are now specifying Hipolito screens, disappearing roller screens, and metal screens. A feature is made of special screens for casement windows.

THE BALL AS USED IN

RELIANCE

Ball Bearing Door Hangers

Means maintenance costs kept at rock bottom

After-costs practically eliminated

DEPENDABLE

Trouble-Free Service in your Buildings.

Write for the facts

RELIANCE BALL BEARING DOOR HANGER CO.

3039 Grand Central Terminal Bldg.
NEW YORK

PACIFIC COAST AGENTS

Sartorius Co..... San Francisco, Cal.
B. V. Collins.....Los Angeles, Cal.
D. E. Fryer & Co., Seattle, Spokane Tacoma, Wash., Great Falls, Montana.
Columbia Wire & Iron Works.... Portland, Ore.

Shirley Houghton Now Sole Owner

The extensive contracting business of the Van Sant-Houghton Co. will remain, for the present at least, under the name of Van Sant-Houghton Co., although Robert H. Van Sant, Jr., has withdrawn from the firm and Shirley Houghton continues as sole owner and director. Associated with him are D. F. Keating, who will act as manager; C. E. Myers, chief engineer, and J. J. Smith, general superintendent of construction.

The Van Sant-Houghton Co. are among the best known of the general contractors in San Francisco, making a specialty of reinforced concrete construction.

Of the work now in hand, the following will be completed on or before September 1st:

Second Church of Christ, Scientist, Oakland (Thirty-fourth and Elm streets).

Reliance theater and office building, Oakland (Seventeenth street and San Pablo avenue).

Sperry Flour Company's garage, San Francisco (Sansome and Green streets).

UNIT-BILT reinforced concrete roundhouse for Southern Pacific Company, Watsonville Junction, Cal.

Seven thousand linear feet UNIT-BILT reinforced concrete umbrella sheds and passenger, express and baggage subways for the Denver Union Terminal Railway Company at Denver, Colo. Will be completed October 1st.

Reinforced concrete extensions to machine rooms of Crown Willamette Paper Company, Camas, Wash.

Work on reinforced concrete paper plant for Pacific Mills, Ltd., at Ocean Falls, B. C., is being pushed with the greatest rapidity in order to complete the structure before the rains set in.

In addition to the above the following new jobs may be enumerated:

Moving the Buckley building, Market and Spear streets, San Francisco, for the Southern Pacific Company.

Construction of reinforced concrete UNIT-BILT roundhouse for S. P., L. A. & S. L. R. R. Co. at Milford, Utah.

Foundry building (reinforced concrete) for Union Iron Works Company, San Francisco.

Mr. Houghton has the best wishes of the building trade for success in his future operations. He will adhere strictly to the old policy of the firm, which may be described as the confinement of operations insofar as practicable to railroad and industrial type buildings and adherence to the cardinal principles of success—honesty, efficiency and courtesy.

MARYSVILLE SAND PLANT

The Pratt Building Material Co.'s sand plant at Marysville produces the best sand in California, so architects and contractors say. Phone Pratt Building Material Co. in the Hearst Building for prices.

California Casualty Company

The California Casualty Company has been engaged in the surety business for a year and a half, and while its rates have been of the lowest its losses have been nil—so that it may be said that its moderate schedule of fees has been justified by results. The report of the California Insurance Commission, in summarizing their statement of the company's condition as of April 30, 1916, says:

"The experience of the company in the fidelity and surety class has been extremely favorable; the fact that no losses have been incurred is due mainly to the careful investigation and scrutiny to which every application is subjected."

Studebaker to Have New Oakland Building

The Studebaker Company is to have a new sales building and garage for its Oakland business. The structure is to be erected at the corner of Hawthorne street and Broadway by K. C. Abels.

Glauber Company's New Catalog

The publishers are in receipt of a copy of Glauber Brass Mfg. Co.'s new catalog "H" in the architect and builder's edition, which those who have seen it pronounce a wonder in its comprehensiveness and practical value, especially to architects.

It is claimed to be the most extensive work of its kind ever issued, being a volume of nearly 400 pages with some 200 illustrations, besides tables and useful data for the hydraulic, steam, gas and sanitary engineer.

A specialty is made of illustrating the most improved designs in concealed lavatory and bath fittings, including the very latest in fixtures for the new recess—or built-in tubs.

This catalog shows mixing valves for showers, baths or basins, that are guaranteed to mix the water to any desired temperature. There is also shown a great variety of plumbing appliances, including bath and basin fixtures, traps and wastes, valves for all sorts of fixtures, with different escutcheons or handles and showers for the moderate bungalow or the finest mansion; also sanitary drinking fountains for schools or public buildings, straight and angle basin and bath supplies, all styles of brass traps and strainers, ball-bearing, self-closing basin cocks and bibs, Nu Rapid work, compression and Fuller work, ground key work in all designs used for water, gas or steam.

The Glauber Brass Mfg. Co. began business in a modest way in 1889 and has grown until its factory covers an entire block on Superior avenue, Cleveland, Ohio. The name Glauber has become a synonym for the first and best production of the plumbing brass goods makers, skill and art being always in evidence. Superiority of workmanship, symmetry of design and perfection in quality and finish characterize the Glauber products.

A five-year guarantee covers all Glauber brass goods.

Architects will recall the company's success at the Panama-Pacific International Exposition, where three medals of honor and three gold medals were awarded, the most and highest award ever given any plumbing brass goods manufacturers at any exposition.

The Glauber San Francisco office is in charge of Mr. M. W. Wuesthoff and is located at 1107 Mission street.

A postal card or phone call—Market 9285—will bring one of these valuable catalogs, which should be in the reference library of everyone interested in building construction.

BME
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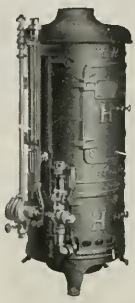

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Volume XLVI
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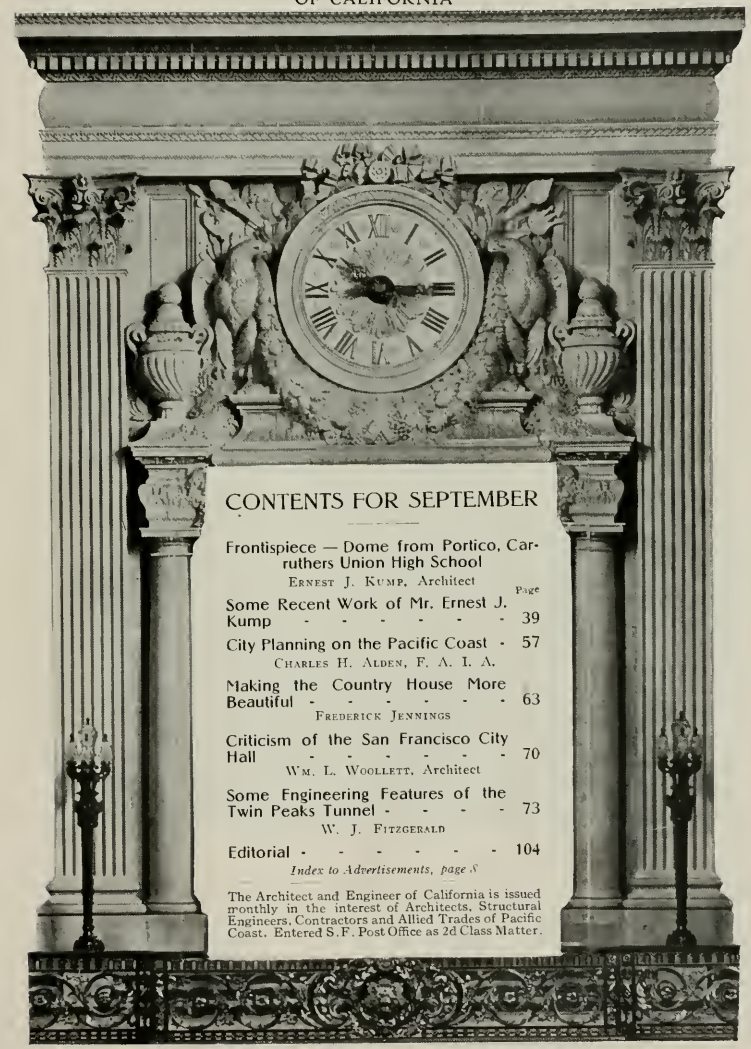

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ERNEST J. KUMP, Architect

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The Architect and Engineer of California is issued monthly in the interest of Architects, Structural Engineers, Contractors and Allied Trades of Pacific Coast. Entered S. F. Post Office as 2d Class Matter.

DOME FROM PORTICO, CARRUTHERS UNION HIGH SCHOOL
ERNEST J. KUMP, ARCHITECT

Frontispiece
The Architect and Engineer
of California
for September, 1916.

THE
Architect and Engineer
Of California

VOL. XLVI. SEPTEMBER, 1916 No. 3.

CARRUTHERS UNION HIGH SCHOOL.
Ernest J. Kump, Architect.

Some Recent Work of Mr. Ernest J. Kump

IN the succeeding pages of this issue will be found some interesting pictures showing the recent work of Mr. Ernest J. Kump of Fresno, reputed the youngest practicing architect in California. Barely twenty-eight years of age, Mr. Kump points with pride to the forty or more school houses and other public and private buildings designed and built under his supervision in the last four years—a record that many older architects may justly envy.

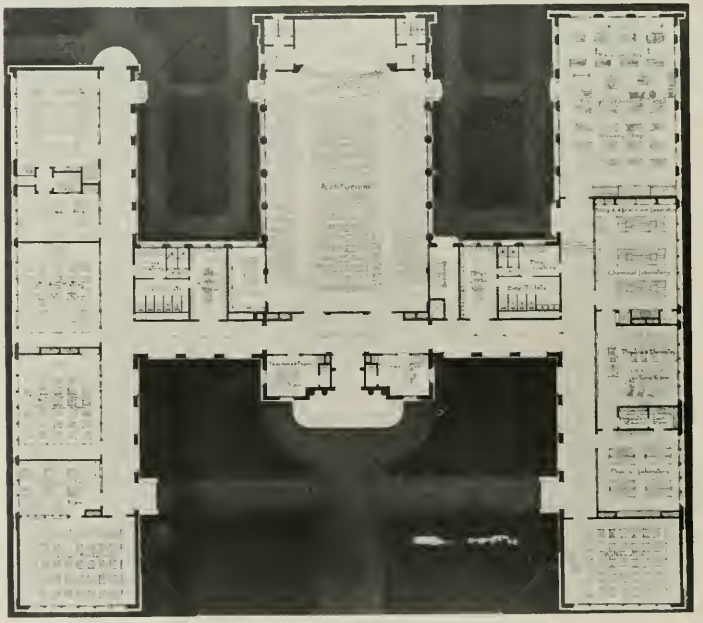
It is only in exceptional cases that a good architect is also a good business getter. Mr. Kump enjoys both of these winning attributes. To his personality and untiring aggressiveness is attributed his success in getting so many attractive commissions, while his ability to design has made it possible for him to carry out these commissions successfully. School house architecture has had a dominating influence in Mr. Kump's four years' practice and he is credited with having planned no less than thirty-three such structures, ranging from the modest two-room district school to the pretentious high school of 20 or more class rooms and assembly hall. These schools have been built in Tulare, Kings, Stanislaus, Fresno, Merced and Kern counties. For excellence of design they stand comparison with any other school building costing the same money in the State. They represent a new and popular type of school architecture on the Pacific Coast—the low, one-story building with abundance of light and good ventilation. The pictures show what this young student of architecture has done—a record that is indeed very much to his credit. It will be noted that the predominating style of his work is Spanish Renaissance and modified Mission. The Carruthers Union High School is probably the best example of the combined types. The coloring of this structure was given special study by the architect, who may be said to be the first to make use of Exposition colors on a building outside the Exposition

SOUTH VIEW, CENTRAL FACADE, CARRUTHERS UNION HIGH SCHOOL
ERNEST J. KUMP, ARCHITECT

DETAIL OF ENTRANCE, CARRUTHERS UNION HIGH SCHOOL.
Ernest J. Kump, Architect.

WEST PARK SCHOOL, FRESNO.
Ernest J. Kump, Architect.

WASCO UNION HIGH SCHOOL.
Ernest J. Kump, Architect.
Ward & Goodwin, Builders.



FLOOR PLAN, WASCO UNION HIGH SCHOOL.
Ernest J. Kump, Architect.

JACKSON SCHOOL, CITY OF FRESNO.
Ernest J. Kump, Architect.

NEWMAN CARNEGIE LIBRARY, NEWMAN, CALIFORNIA.
Ernest J. Kump, Architect.

WOLTERS COLONY SCHOOL, FRESNO
ERNEST J. KUMP, ARCHITECT

WOLTERS COLONY SCHOOL, FRESNO.
Ernest J. Kump, Architect.

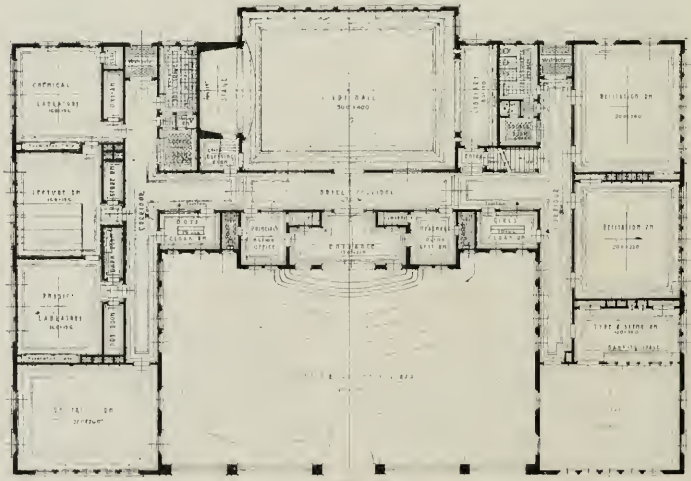
city. His experiments proved most satisfactory. The Tipton and Wasco schools are considered among his best works. The Hotel Johnson, soon to be started in Visalia, will be Mr. Kump's most important commission aside from his public work. This building will be a Class A structure, five stories in height, and will represent an outlay in excess of $135,000.

One of the first successes achieved by Mr. Kump was in connection with the Kern county jail, the plans upon which he worked being the ones adopted out of fourteen sets of drawings submitted by as many noted architects from all sections of the country. It is not generally known that Mr. Kump is an engineer as well as an architect and business getter—a combination of talents that should in themselves insure success. As architect and engineer he drew the plans and superintended construction of a $200,000 open-hearth steel plant for the West Coast Iron Company in South San Francisco, pronounced one of the best designed and most up to date plants of the kind in the world.

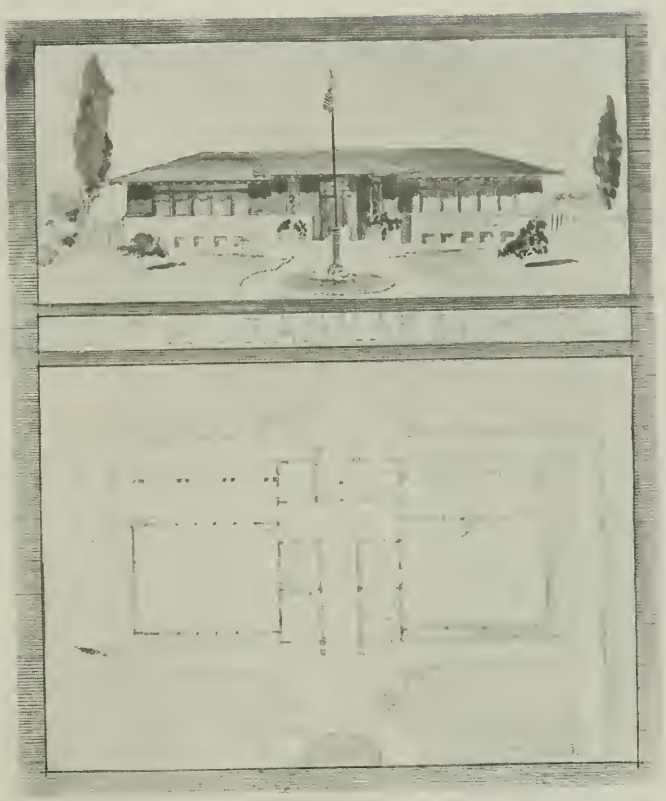
Mr. Kump's college education was rounded out with several years' practical training in the offices of some of the most distinguished architects on the Pacific Coast. Mr. Kump has held a certificate to practice architecture since 1912, it having been issued to him by the California State Board of Architecture, Southern District.

OROSI UNION HIGH SCHOOL.
Ernest J. Kump, Architect.

GUSTINE UNION HIGH SCHOOL.
Ernest J. Kump, Architect.



FLOOR PLAN, GUSTINE UNION HIGH SCHOOL.
Ernest J. Kump, Architect.



ELEVATION AND FLOOR PLAN, ALTA GRAMMAR SCHOOL
ERNEST J. KUMP, ARCHITECT

CUTLER GRAMMAR SCHOOL, TULARE COUNTY.
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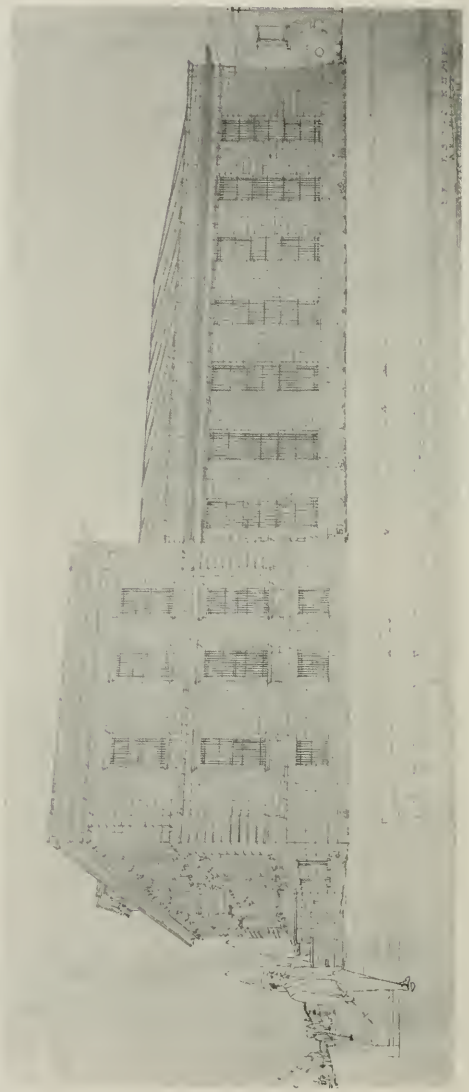
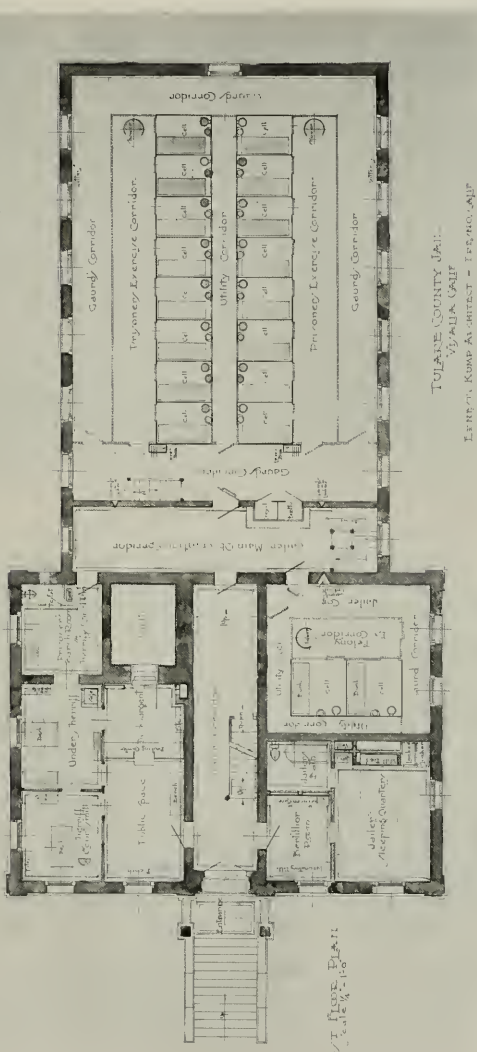


TULARE COUNTY JAIL, VISALIA, CALIFORNIA
ERNEST J. KUMP, ARCHITECT



FLOOR PLAN, TULARE COUNTY JAIL, VISALIA
ERNEST J. KUMP, ARCHITECT

SACRED HEART HOSPITAL, HANFORD.
Ernest J. Kump, Architect.

OPERATING ROOM, HANFORD HOSPITAL.
Ernest J. Kump, Architect.

STERILIZING ROOM, OPERATING DEPARTMENT, HANFORD HOSPITAL.
Ernest J. Kump, Architect.

HOOVER RESIDENCE, "HOME OF REDWOOD," FRESNO.
Ernest J. Kump, Architect.

HOUSE OF MR. JOSEPH MARACCI, FRESNO.
Ernest J. Kump, Architect.

BREAKFAST ROOM (LAVENDER, PEACOCK TAPESTRY), HOUSE OF MR JOSEPH MARACCI, FRESNO.
Ernest J. Kump, Architect.

INTERIOR ST. JOHN'S CHURCH, FRESNO.
Ernest J. Kump, Architect.

HOTEL JOHNSON, VISALIA.
Ernest J. Kump, Architect.

SAN FRANCISCO CIVIC CENTER: LIBRARY ON THE LEFT, AUDITORIUM IN THE CENTER, CITY HALL ON THE RIGHT

City Planning on the Pacific Coast

By CHARLES H. ALDEN, F. A. I. A.*

IT is now some years since the people of Seattle had actively before them a plan for the city's development. Although the plan then presented was conceived on broad lines of economy and utility as well as beauty with a resulting commercial value, the disinterested study given the subject unhappily resulted not in avoidance of troubles as was intended, but in misunderstandings and controversies. The planning of the city in the interests of economy, utility and beauty with a view to its commercial as well as its aesthetic value is obviously too important to be permanently neglected. Other cities, profiting by the consideration of plans for city development and efficiency resulting therefrom, are encouraged to profit still further. Now that we, in Seattle, can review this matter calmly in the absence of conflicting issues, it seems appropriate that we should again take account of our faith in the city and consider how its physical development can be guided to meet its true ends—in other words, give thought to the city plan.

On the writer's retirement from the chairmanship of the League's city plan committee some three years ago he presented through the columns of the press some views on the local situation. Since that time residence in the two great California coast cities has presented to him striking examples of how these communities have suffered by neglect, and have profited and are now profiting by serious attention being given to the physical development of the city. Seattle and other cities on this coast have suffered by lack of interest in each other's civic endeavors, having failed to observe and consequently to profit by each other's failures and successes in the working out of civic problems. This is eminently true of efforts toward a city plan and it is the purpose of this article to present some observations suggested by what was found in these great coast cities to the south.

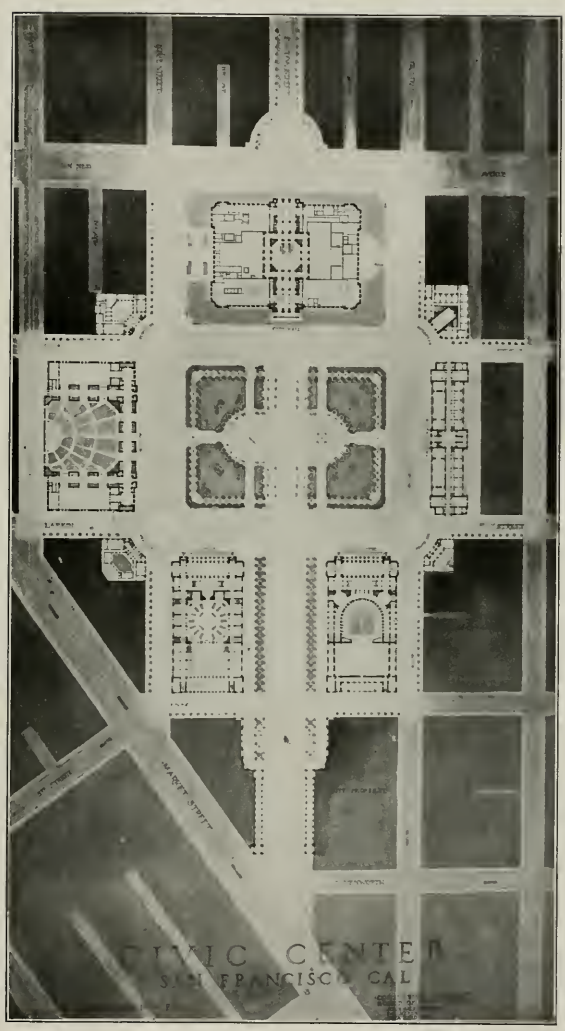
* * *

San Francisco, like other cities, presents examples of both the good and the bad; the bad, however, is not presented obtrusively to the visitor. It is mainly evident in the older portion of the city to the north and east devoted to wholesale commercial use. Here the narrow streets and rectangular platting regardless of grades handed down from earlier days have seemed impossible of correction. That this condition occasions continual financial loss through congestion and indirect routing of traffic is evident. Apart from this direct question of street traffic, a conspicuous example of the injurious effect of this lack of attention to a city plan occurs here in the location of the Custom House. Appropriately situated in this wholesale business district it was located apparently without thought of conformity with surroundings. A monumental building fittingly expressing its character and the dignity of the Federal Government, its impressiveness is lost, hemmed in as it is between narrow streets, the narrowness of the streets operating against the value of the building for purposes of business as well as architectural effect.

Passing south and west to the newer portions of the city, we see the pleasanter side of the picture. The ferry station, at the natural gateway to the city, has the wide business thoroughfare, Market street, leading directly

*Mr. Alden is well known in San Francisco through his connection with the Bureau of Architecture of the Panama-Pacific Exposition. He is a former president of Washington State Chapter, A. I. A., and is at the present time a resident of Seattle. It is from the Seattle man's point of view that this article is written.

A BIRDSEYE VIEW OF THE SAN FRANCISCO CIVIC CENTER AS ORIGINALLY PROPOSED; AS NOW DEVELOPED, THE POSITIONS OF THE LIBRARY AND PROPOSED OPERA HOUSE ARE REVERSED.



BLOCK PLAN OF THE SAN FRANCISCO CIVIC CENTER.

from it to the western hills where ascent is made by winding streets adapted to the topography of the land. About midway in the length of Market street another wide thoroughfare, Van Ness avenue, leads across the city to the bay. Logically an appropriate place for locating its important public buildings, the city voted some five years ago to acquire sufficient land in the angle formed by the intersection of Market street and Van Ness avenue to place these buildings in an effective group with an appropriate setting. The necessary bond issue to acquire the land and begin the construction of the buildings passed by an overwhelming vote and plans were at once made by the city's consulting architects to make this civic center a reality. The land was acquired and signs appropriately displayed on the sites for the different buildings served to enlighten the people, and all sections of the city appeared to be a unit in supporting with enthusiasm this expression of the city plan.

The City Hall, a building for both city and county, which are one in San Francisco, was naturally made the dominant feature of the group. It closes the vista on the main axis of the Civic Center facing towards Market street, but with an imposing façade on Van Ness avenue, its singularly beautiful and graceful dome giving expression to this center of civic interest.

Flanking the open area in front of the City Hall were planned to be placed the Civic Auditorium and a building for state uses. The Auditorium is ideally located for accessibility; in addition to the open area in front where crowds and vehicle traffic can find ample accommodation, the rear of the building adjoins Market street with its superior traffic facilities. This Auditorium, the first of the buildings to be completed, has been in use for conventions during the Exposition and for balls, concerts and other civic functions. Opposite the City Hall and flanking the main approach from Market street on the axis of the Civic Center sites were reserved for a public library and an opera house. The public library is now under construction, its design adequately conforming with the dignified treatment of other buildings in the Civic Center. Plans were made for the opera house, but owing to certain features proposed for its management the mayor of the city felt obliged to impose his veto for the safeguarding of the public's future rights. Bonds have been voted for the State building, thus providing for the completion of the Civic Center group on the opposite side of the Auditorium and plans for the construction are now under way.

* * *

City plan conditions in Los Angeles are interesting and significant. The rapid growth of the city without any intelligent plan has resulted in a seemingly hopeless congestion and confusion in its busy business district. Streets of ample width before the city had attained its present business importance are now so crowded that a passage through them is dreaded and avoided, traffic is constantly delayed and it is only by the earnest efforts of the traffic officers and the patience and forbearance of the public that business can proceed. It is evident that some measure of relief must be found if the city is to continue any further growth.

The development of the city has been rapid. Its business district, obstructed at the northern end by hills, has spread rapidly to the south. Through these hills tunnels were resorted to as a means of street extension, the nature of the soil and absence of a convenient place for depositing material making impracticable the regrading that solved the problem for Seattle. This growth to the south was anticipated by a business building

which years ago was established in what was then an undeveloped area. The move, then looked upon as radical, has since been amply justified. The city's public buildings remaining in their old locations at the north did not appear to interrupt this development of the city in the southerly direction.

Los Angeles has another aspect pleasanter than this confusion in the down town streets. Famed as a residence city, its wide avenues and boulevards outside the business section offer a significant contrast. One of these handsome avenues skirting the business section extends to the south three miles to Exposition Park, where there has been erected an impressive group of buildings around an ample area. These buildings are: An armory, a county museum containing historic and scientific relics, and a state museum displaying the resources of California. Another park of entirely different nature is practically within the city's business area and demonstrates the value of having an open space for relief from crowded thoroughfares. This park occupies an entire city block and is attractively provided with shade trees, fountains and with seats which are in constant use. This city park effectively accommodates on its busiest street frontage the troublesome civic problem of the comfort station, which is inconspicuously located under the surface of the ground and admirably equipped, contributing materially to the park's public value. For more extensive parks and boulevards the city is now developing its opportunities in the hills and valleys to the north, where there is located a public golf course and connections are made with state and county highways.

Both these California cities have city planning problems immediately before them for consideration. In San Francisco the recent great Exposition left a legacy not only of pleasurable memories but of lessons as to the practical and commercial value of art, expressed in planning as well as in other phases. Although the Exposition has served the allotted time allowed for in its construction, the people of San Francisco are reluctant to have it disappear and committees of influential citizens have been formed to bring about the retention of some features as a permanent addition to the city. A city planning commission, authorized by vote of the people and soon to be appointed by the mayor, is to take this subject under consideration with the directors of the Exposition company. Whatever may be the result of efforts to preserve buildings, the development of the grounds will give the city a valuable water front area, and a new street to the scenic water front beyond, already begun by the necessities of Exposition construction, will undoubtedly be further developed and made a permanent addition to the city's highway system.

Los Angeles for some time has had projects to open a wide avenue of approach from her railroad station terminal and to develop open areas or create civic centers where her postoffice and city and county buildings are located. A city plan commission to handle these and similar projects when authorized by the public already exists in Los Angeles as a part of the city government.

To the Seattle citizen some of these observations in other cities may be illuminating. It is illuminating to find that "civic center" is not a cause for sectional controversy and a signal to promote or defeat at any cost a suggested public improvement that might be connected therewith. It would, for example, be absurd to suggest to the down town business man in San Francisco that he might be expected to show antagonism because the Civic Center is not located in the business district where he has his realty holdings. Similarly in Los Angeles, these public buildings seem to

be ignored in any resentment that may be felt toward a movement of the business district. This movement in the business district of Los Angeles is somewhat similar to Seattle in that it was precipitated by radical development at a distance away from the older business section. It is apparent that in both instances it was wise for owners in these older districts not to oppose schemes for expansion but to endeavor by healthy competition with the newer developed section to provide as attractive buildings and surroundings as the new portions of the city offer. In this way tenants can be retained and new business attracted without the city being torn by sectional controversy.

Seattle, with its enormous natural advantages and its accomplishments in building canals, removing hills and developing public utilities, serves but to illustrate the value of a plan to provide intelligently for growth in logical directions. A breadth of vision in providing for the needs of the city in all its related parts is the function of the city plan.

* * *

To Standardize School Architecture

A MOVEMENT has been undertaken by the Department of School Administration of the National Educational Association to standardize school architecture or rather to determine minimum essentials in the general plan and construction of school houses. The committee is headed by Mr. Frank Irving Cooper of Boston and includes in its membership Mr. S. A. Challman, school building commissioner for Minnesota; Mr. C. E. Chadsey, superintendent of schools, Detroit; Dr. Louis M. Terman, professor of hygiene at Stanford University, and Dr. Leonard P. Ayres of the Russell Sage Foundation.

The committee will find a wide field of useful investigation. While some essentials of classroom size, stair width, etc., have been fairly well established, we have no data for judging the economy of a building, either for layout or construction. There are no figures to show whether a building is wasteful in corridor space, whether special rooms are too large, whether the fireproofing is reasonably adequate; whether the cost of the heating plant is out of proportion to similar plants; whether the finish and ornamentation are extravagant; whether the exit facilities are fully safe; or whether the sanitation complies with minimum requirements.

While absolute standardization of school houses cannot be hoped for as a result of the committee's efforts, there is much that it should do. Its findings should form the basis not only for practice in individual cities and towns, but should be utilized in outlining state legislation.

The committee deserves the heartiest support of school boards and school architects. Its findings will become common property for the betterment of American school houses, and thereby for the betterment of American education.—School Board Journal.

* * *

$600,000 Library for Stanford University

Messrs. Bakewell & Brown, architects of the new San Francisco City Hall, are preparing plans for a $600,000 library for Stanford University. Preliminary drawings have been approved by Librarian George T. Clark and the board of trustees. The building will be constructed of steel and stone and will have a capacity of one million volumes. A feature will be a great reading room with dome and galleries. There will also be special rooms for various departments, a circular delivery room, librarian's office, catalogue room, etc.

Making the Country House More Beautiful*

By FREDERICK JENNINGS.

Howard Shaw, Architect

So many home builders think that gardens are merely accessories to the house—extraneous, incidental decorations, desirable enough to be sure, but not necessary to the welfare of the scheme. So many amateur gardeners think that a garden is a garden—that is to say, they believe that green foliage and bright bloom arranged hit or miss will prove a garden, nevertheless.

So many think they know all about gardens and flowers—like the woman who told her architect he needn't call in a landscape expert as she was familiar with every variety of flower and shrub and she could tell her gardener just what to do. For instance, she would have a row of "salava" along the front of the porch. The architect, realizing his client's ignorance but not wishing to injure her feelings, suggested that the salvia bed might be improved with a background of "spittunias."

All of which emphasizes the point that a landscape gardener is as necessary to complete the surroundings of a home as an architect is necessary to design that home.

The garden is necessary to the house—just as much as the cornice which crowns the roof. Unfortunately, the garden is not always a garden; frequently it is merely a botanical collection of no special benefit to the house and grounds—of only passing interest to gardeners.

Thought should be given to landscape architecture before the house is planned, for no architect or owner can properly size up the correct location of the house on the lot until its surroundings have been considered. What will be lawn and what—garden? Where is the best location for the service yard?

Walls, gateways and fences are all problems to be carefully considered. Nothing could be prettier than these accessories of the landscape architect when they are handled by a capable designer; nothing could be more displeasing than some which we all have seen—blots on the landscape—expensive—oftentimes detracting rather than attracting.

Plain brick gate posts with a simple wooden or iron fence, well proportioned, are always in good taste. To relieve the monotony of plain brick, posts are frequently indented one course every four or five courses, producing horizontal lines of agreeable appearance. Brick gate posts should always be provided with cement or stone caps, otherwise they would soon crumble and require repairs.

In some places rustic gates and fences are quite practical. They are especially attractive on a lot heavily wooded, where the bark on rails and

*The sculpture work, including flower urns, gate posts and garden furniture shown in the accompanying pictures was executed by G. Rognier of San Mateo.

GARDEN, ESTATE
OF
MRS. ANDREW WELCH,
SAN MATEO

GARDEN, COUNTRY ESTATE OF MRS. ANDREW WELCH, SAN MATEO.
Special Garden Furniture by G. Rognier.

COURT,
COUNTRY HOUSE OF
MR. TEMPLETON CROCKER.
HILLSBOROUGH.
Willis Polk & Co., Architects.

CORNER OF THE
GIRVIN COUNTRY PLACE,
MENLO PARK,
CAL.

COLONNADE AND GARDENS, COUNTRY HOUSE OF MRS. GEORGE T. MARYE, HILLSBOROUGH.

Howard & White, Architects.

SWIMMING POOL, JAMES FLOOD ESTATE, MENLO PARK.

STAIRS AND FOUNTAIN, COUNTRY ESTATE OF MR. THOS. DRISCOLL, HILLSBOROUGH.
Louis P. Hobart, Architect.

COUNTRY HOUSE OF MR. R. O. HOOKER, HILLSBOROUGH.
Howard & White, Architects.

COUNTRY PLACE OF MRS. D. T. MURPHY.

HOUSE OF MR. FRED McNEAR, MENLO PARK.
Bliss & Faville, Architects.

posts harmonize with the trees. Hickory is an excellent material for rustic work. When well seasoned it lasts for a very long time.

Brick walls are very effective, and are durable when properly built. Paving brick can be used, or hard-burned red brick, set on edge. Brick walks laid directly on earth soon get out of shape on account of the upheaval by frost. To overcome this difficulty a brick walk should be built on a sub-walk of concrete on cinders. Such construction is expensive, since it involves practically two walks (a concrete walk as well as a brick walk).

Summer houses, large or small, are excellent features for garden or grounds, and landscape architects are much inclined to use them whenever there is opportunity. Many summer houses are little log cabins or small cottages with shingled sides and roof; others, more pretentious, are of rock-faced stone or of concrete. Pergola construction with posts and open roof can frequently be effectively applied to a summer house.

Pools, fountains, sun-dials, urns and flower boxes are all parts of the successful landscape project, and landscape architects have been quick to realize their possibilities. Concrete is the material most frequently used for pools. Fountains used in connection with pools are of great variety, from the simple "bubble" to the more extravagant sprays. Nothing produces quite the effect of a pool or fountain, and one will get more pleasure from even the simplest arrangement than almost any other feature of the house and grounds.

When it comes to what one might call the "architectural arrangement" of the garden itself there is every possibility for skill. Many good ideas in the use of flowers, shrubs and trees can be gained from examination of old-fashioned gardens. Hollyhocks are frequently used, and contrary to modern gardens (in which hollyhocks are almost always planted against a wall), they were often massed independently in large clusters.

In many old New England yards a surrounding hedge of tall, flowering shrubs was frequently employed, and in this enclosure the garden was laid out. Thus one had a delightful place to read or rest, with the busy world shut out.

Sculpture lends itself readily to landscape architecture, being frequently employed for flower urns, sun-dials, fountains, tables and seats. Sculpture has come to be considered an integral part of any garden plan, and the use of garden sculpture and pottery opens up endless possibilities. Both simple and elaborate effects may be secured, as best suits the whims of the owner.

House of Mrs. D. T. Murphy, Hillsborough.

Entrance Gates, Estate of Mrs. D. T. Murphy.

Criticism of the San Francisco City Hall

By WILLIAM L. WOOLLETT, Architect.

I HAVE just finished reading a very impressive article in the August Architect and Engineer by Mr. B. J. S. Cahill, entitled "The New City Hall, San Francisco." The unalloyed praise of this skillful paper suggests to my mind that perhaps a truly critical article might be acceptable—especially from one who conscientiously seconds the splendid compliments of Mr. Cahill. Messrs. Bakewell & Brown are modest gentlemen, who would hardly think of their work as being perfect, and who are undoubtedly broad enough to be amused by genuine criticism. Being conscious of their ultimate achievement, the splitting of hairs concerning some ultra viewpoint of their work savors more of compliment than otherwise.

Having safely passed the Rubicon of this prologue, I "opine" that the City Hall is too small in scale. In this I think that we all agree, except perhaps the uninitiated public. And to him who says me nay in this, my reply is—betake yourself to the new "Tech" buildings at Cambridge and stand between the columns of the Greek portico and sense there the value of "scale" as an element in architectural composition. The giants who live in such buildings could pick up the San Francisco City Hall and carry it under their arms through the main portal.

This is picturesque language, but the implication of triviality applies measurably to the conditions of the Civic Center taken as a whole quite as much as to this individual building. On account of the small scale of the buildings San Francisco's Civic Center is not "heroic," it is not "grand," it is not "sublime," it is not "classic," it is not even modern; it is "delicatessen, to use one of Mr. Cahill's terms. Just why I think of the steam calliope at this time I do not know—probably because I always think in extremes, but to me as an individual the City Hall proclaims very loudly its importance with gilt and flounces of rich ornament which "she wears not unlike a prima donna." The City Hall apparently exists for a supine glory.

In the days of Benvenuto "people fought in the streets" over just such questions as these my criticisms evoke. And they differed to good purpose, for beautiful things in art were turned out in those days, presumably a partial result of the high temperatures evolved. Today we are sufficiently pleased, no matter how artists perform their functions as public decorators.

One observation that I would like to make is evolved from a purely "archaic" point of view—a view which very few moderns, even the most cultured, care to bother with. I refer to the overcoming of optical illusions by introducing irregularities in architectural forms. By way of illustration, if you will notice the Civic Center and Van Ness avenue entrances you will observe that the doorways at the top look wider than they do at the bottom. This observation is true of other openings in the building. One of the ancient architects, a Greek or a Florentine perhaps, would have corrected this seeming error by actually building the openings smaller at the top than at the bottom. Again, if you will look up into the dome, you will observe that the columns of the rotunda look squat, and that their apparent heaviness qualifies, to its disadvantage, the detail below. This difficulty could have been obviated by tipping the columns in toward the center and rearranging the entisis of the columns to combine with this arrangement. As it is not the "style" in this age to take account of optical illusions in building, there is no "faux pas" implied by this observation.

And the rotunda—what does it all mean—all the ornament and the trimmings? They are exquisite in their various parts. In Athens, in Rome, in Venice and in old Florence these carvings and tablets and statues

and busts always meant something to the contemporaneous populace. What do these ornaments mean to us? As Mr. Cahill implies, are we a heterogeneous mass of humanity and have we nothing to express? Are we a people without ideals or moral purpose? At least it would be difficult for a stranger from Mars to obtain from this rotunda any idea as to our ideals or progress in science, commerce or religion. If this bit of modern architecture proclaims anything it is this—I am pretty, I am nice and I cost a lot. That this message is put over with dexterity goes without saying. As I remember, the dean of the profession in this community said to me in connection with the City Hall: "That man Brown is a wonder." But oh, how banal! The masterly spirit of a people who builded on ashes has only this, a "parfait," as a monument to its vigor, whereas in immortal stone and mural decoration history might have been preserved. The whole range of our western spirit could have been here idealized. The naive Bohemia that San Francisco was and in part still is should have been expressed. And the great men who have gone before, like Stevenson and O'Henry and Huntington, and the deeds of Mackay, Fair, Flood and O'Brien, and the romance of the still earlier Spanish time—all these and more should speak from the walls. Why should not the public building be a monument to the men whose lives have made possible the history of a community? And it is not a criticism of architects but a commentary on our civilization and the shallow and superficial character of our aesthetic ideals that a great structure, builded in the pride of a daring and enterprising people, should declare its builders so feebly.

And yet in our eyes this is a beautiful building. What is beauty? It is the sense of a satisfaction in the arrangement of values. And we are satisfied and alas contented also.

* * *

Public Duty of the Architect

ALL things seem to move in circles, yet the interval of recurrences may at times be so long that the movements are not readily seen. For centuries all social effort has been more or less pronouncedly individualistic, but today we are in a measure turning back to the principles of the times of the patriarchs. Under such conditions the government of the city must become something more than a restraining and protecting force, for cities are no longer sovereign states and do not wage war one against the other. Their functions are limited to conserving the health, morals and commercial interests of the people. City government is no longer military in spirit, but a centralized social force, and since the nation has also passed from the early constructive stages when the lawmaker was the all-important factor, so have we also come to the time when the lawyer should in great measure give way to the constructive expert.

Organic and efficient methods of control, of which city planning in the broadest sense of that term has become a fundamental factor, are now far more imperatively necessary for the city than ever before.

The architect, because of his artistic and technical training, has a greater measure of responsibility than the average citizen, and he should be a forceful factor in all movements for civic reform and advancement. That he has signally failed to recognize the obligation is too often evident. At a conference on city planning the architect is noticeable by his absence, and in most cities a public discussion of harbor improvements, railroad terminals and the like will bring out the fact that apparently the architect, with but few exceptions, has given little or no consideration to such projects. Even housing reform is passed by with much the same indifference.

While all such matters may not be directly "grist to the mill," yet it is indisputable that the architect who does study such problems and takes part in their discussion is both broadening his outlook and ideals, and emphasizing the importance of his profession in a way that must ultimately work to his betterment—there are still far too many people possessed of the fancy that the architect is a mere maker of pictures.

The city needs the architect's help in the development of a right civic ideal just as much as it needs the help of the engineer, social worker or banker, and the architect must give this help even at the risk of being out of favor with the powers that be, if he would secure for his profession the respect due it from his fellow citizens.—William W. Emmart in National Architect.

* * *

More About the Proposed Bay Cities Bridge

THREE distinct projects for bridging San Francisco bay have now been submitted to the United States Engineering Corps and the good and bad features of each will be reported to the proper government authorities in due time.

Only one plan has the approval of the special committee from the San Francisco Commercial Club—the one executed by three collaborating Eastern engineers, Harlan D. Miller, Wilbur J. Watson and W. R. Davis. It is the plan described very fully in the July Architect and Engineer, and only one of three proposed bridges that does not contemplate a landing place on Yerba Buena island. The other two plans are by Allan C. Rush and Charles Evans Fowler.

Joint committees from the four Chambers of Commerce about the bay reported, under the Miller-Watson-Davis approved plan, that:

> With a clearance of 100 feet, 95 per cent of the ships entering San Francisco harbor will be able to go under the bridge.
>
> The proposed bridge is to be so located that only 9 per cent of the vessels entering the harbor will be required to pass under it.
>
> The San Francisco end of the bridge will go over the top of Pier 44, so that only two of the thirty-five piers under control of the State Harbor Commissioners are beyond the bridge.
>
> The value of the freight docking beyond the bridge is only 11 per cent of the total in the harbor, composed largely of oil and lumber.
>
> Oil, 30 per cent of the total tonnage of the harbor, and lumber, 25 per cent, comprise the bulk of freight to be carried beyond the bridge.
>
> Only three ships a day exceeding 1,000 tons gross and only two ships a day exceeding 100 feet in height now pass the line of the proposed bridge, not excepting vessels docking at Hunter's Point.
>
> Forty million persons are carried by ferries across the bay each year, at right angles with the shipping lanes. Ferryboats make 150,000 trips a year.
>
> The annual commerce of the harbor amounts to 9,907,549 tons of a value of $554,063,227, handled by 11,130 steamships and 1,576 sailing ships.

Engineers Watson and Miller state that they have prepared estimates of the additional cost of raising the bridge above 100 feet, so that all vessels might pass under it, should that be deemed necessary.

Reports favoring the project have been received from fifty civic organizations about the bay.

WEST PORTAL, TWIN PEAKS TUNNEL, SAN FRANCISCO.
M. M. O'Shaughnessy, City Engineer.

Some Engineering Features of the Twin Peaks Tunnel

By W. J. FITZGERALD.

THE dauntless spirit with which the citizens of San Francisco prosecuted the gigantic labor of rehabilitation after the disaster of 1906 did not seek retirement with the completion of this work, but, on the contrary, has taken unto itself a series of tasks, the realization of each of which is an appreciable stride toward the firmer establishment of that city as the Metropolis of the West, the gateway to the Orient, and one of the leading cities of the nation, at the same time stamping her as the most marvelous city in the world. Of these various undertakings, Twin Peaks Tunnel, the largest single project in San Francisco or on the Pacific Coast at the present time, bids fair to do more for the rapid growth of that city than any other project since her inception.

While contributing much to her natural charm and adding greatly to her scenic advantages, San Francisco's hills have formed a physical barrier which has retarded the populating of the district in the southwesterly portion of the county. With the advent of the present progressive and energetic administration, steps were taken to bring this very desirable residential district into immediate contact with Market street, the city's main thoroughfare, by the construction of a 12,000-foot bore for rapid transit trains through Twin Peaks ridge.

Robert C. Storrie & Company entered into the contract for this work for the estimated sum of $3,372,000 on November 2, 1914, the time allowed being 1,000 days, making the date for completion July 29, 1917.

Ground was broken at Seventeenth and Castro streets, the easterly terminal, on November 30, 1914, and the first three months thereafter were spent in forming an organization, in constructing drains and in reconstructing sewers and high pressure mains and other appurtenances. During the

last eighteen months the equivalent of 7,950 feet of tunnel has been constructed, together with the Eureka Valley station, 60 per cent of Laguna Honda station, both portals and the two ventilating stations, one in the Relief Home tract and the other at Eighteenth and Hattie streets. In the light of past progress and with a going organization, it is assured that the remaining 3,303 feet to be constructed will be done well within the time allowed. The diligence exercised by the contractors in keeping the progress apace with the schedule merits much praise.

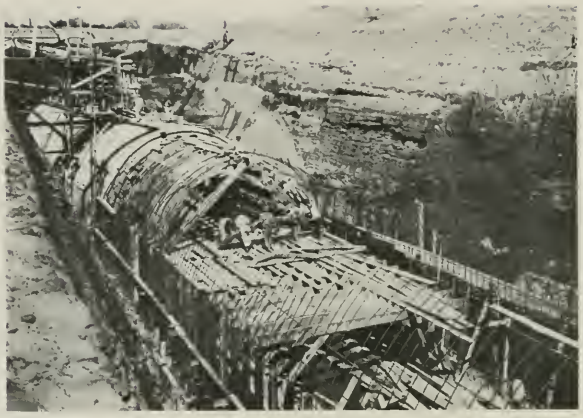
The following table, arranged in the order of stationing which starts at the westerly end, has been prepared to permit of a ready understanding of the alignment, subdivisions, etc., of this work:

SUB-DIVISIONS	STATIONING	GRADE	
		Ascending	Descending
West Approach	0+00. to 0+83.	.015	.....
Tunnel Section	0+83. to 17+27.26	.015	.....
	17+27.26 to 30+31.44	.015	.....
	30+31.44 to 30+73.	.015	.....
Laguna Honda Station	30+73. to 33+73.	.015	.....
Tunnel Section	33+73. to 34+30.10	....	.03
	34+30.10 to 36+60.10	....	.03
	36+60.10 to 47+13.00	....	.03
Ventilating Station	47+13. to 47+26.00	....	.03
Tunnel Section	47+26. to 98+64.00	....	.03
Taper Connection	98+64. to 100+44.00	....	.03
29′ 6″ Tunnel Section	100+44. to 100+74.00	....	.03
Subway Section	100+74. to 103+76.81	....	.0287
	103+76.81 to 104+96.23	....	.0287
	104+96.23 to 108+52.73	....	.0287
	108+52.73 to 109+72.15	....	.0287
	109+72.15 to 111+45.76	....	.0287
Eureka Valley Station	111+45.76 to 114+45.76	....	.0140
Subway Section	114+45.76 to 114+85.61	....	.0140
	114+85.61 to 117+33.56	....	.0140
	117+33.56 to 117+38.76	....	.0140
East Approach	117+38.76 to 119+25.76	.0424	.....

SUB-DIVISIONS	DISTANCE ON		CURVE	
	Tangent, ft.	Curve, ft.	Direction	Radius, ft.
West Approach	83.000	.....	.....	.....
Tunnel Section	1,644.260	.....	.....	.....
	.....	1,304.183	Right	5,729.65
	41.557	.....	.....	.....
Laguna Honda Station	300.000	.....	.....	.....
Tunnel Section	57.103	.....	.....	.....
	.....	230.003	Right	5,729.65
	1,052.894	.....	.....	.....
Ventilating Station	13.000	.....	.....	.....
Tunnel Section	5,138.000	.....	.....	.....
Taper Connection	180.000	.....	.....	.....
29′ 6″ Tunnel Section	30.000	.....	.....	.....
Subway Section	302.816	.....	.....	.....
	.....	119.420	Right	1,555.49
	.....	356.500	Right	1,017.95
	.....	119.420	Right	1,555.49
	173.610	.....	.....	.....
Eureka Valley Station	300.000	.....	.....	.....
Subway Section	39.850	.....	.....	.....
	.....	247.950	Left	861.37
	5.200	.....	.....	.....
East Approach	187.000	.....	.....	.....
	9,548.290	2,377.476		

OPEN CUT EXCAVATION FOR SUBWAY SECTION, TWIN PEAKS TUNNEL.

MATERIAL BUNKERS AND CONCRETE CHUTE, LAGUNA HONDA STATION, TWIN PEAKS TUNNEL.



SECTION CONSTRUCTED IN OPEN CUT AT WEST END, TWIN PEAKS TUNNEL, SAN FRANCISCO.

CONCRETE ARCH IN TUNNEL SECTION CONSTRUCTED IN OPEN CUT, SHOWING KEY AND ROUGHED SURFACE FORMING CONSTRUCTION.

The subway section was chosen because of the shallow depth of covering near the portal. This unit consists of a two-compartment reinforced concrete tube with each compartment measuring 14x15 feet in the clear, above rail grade; the side walls measure 21 inches in thickness, the roof slab 18 inches, the floor slab 20 inches, and the center wall 12 inches. The concrete is hipped in all corners on a 45 degree angle, giving the clearway the appearance in section of a blocked figure eight on its side. Refuge niches 6 feet 4 inches high by 4 feet wide are located every 50 feet in each of the three walls, those in the center wall alternating with niches in side walls. Two 8-inch tile drains are located at each side of the floor slab, the upper surfaces of same sloping 2 inches from its juncture with the center wall.

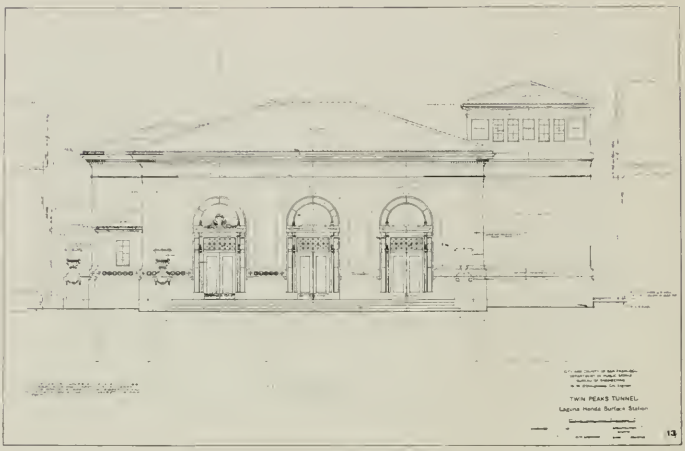
Over the westerly termination of the flat top section is situated the Eighteenth and Hattie streets ventilating station, which forces air through a duct into the space above the ceiling slab of a 30-foot length of arched tunnel section which adjoins the subway, whose inside dimensions below ceiling are 29 feet 6 inches wide by 15 feet high. Apart from its 29 foot 6 inch dimension, this section is identical with the typical tunnel section for soft earth described below. Junction between the 29 feet 6 inches and the 25-foot section is made by a transition section 180 feet long.

Three different thicknesses of reinforced concrete lining, 22 inches, 18 inches and 8 inches, are planned for the standard tunnel section, dependent on whether the ground penetrated is soft earth, soft rock or hard rock. The upper half of the standard soft earth section is a semi-circle of 12 feet 6 inches radius in which, parallel to and 7 feet 6 inches above the central axis is constructed a 4-inch reinforced concrete ceiling slab, suspended from the arch lining by 1-inch rods at 10-foot centers and bonded to main arch by reinforced bars and supported thereat by continuous curved brackets of 4-foot radius. Below the center axis for 9 feet, side walls extend on a 40-foot radius, when they join a 20-foot radius curved invert. On the center of this invert a 12-inch ironstone pipe drain is laid and an earth fill placed to 20 inches below rail grade. The side walls are 2 feet 9 inches thick opposite the diameter, the outer surfaces being plumb. The invert is 18 inches thick and the arch 22 inches thick. Tile drains are set in the side walls with weep holes leading into the tunnel at 25-foot intervals. Electric conduits are also imbedded in the side walls.

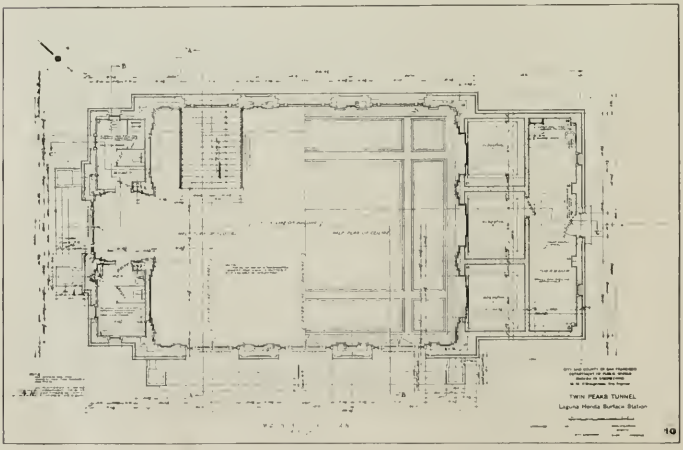
The soft rock section is the same as the soft earth section, save for the footings being stepped instead of being square, the absence of concrete invert and fill, and drain being imbedded in broken rock filled trench.

The hard rock section differs from the soft rock in that the semi-circular arched portion is 8 inches thick, joining a side wall 12 inches thick at the height of the center axis. Opposite the rails these side walls reduce to a 6-inch thickness.

A simple tangental alignment and one continuous grade between the two portals was voted down because of a desire to follow under easy surface grades to the intersection of Eighteenth and Hattie streets and to be within convenient distance of the surface at Laguna Honda station; the former in order that the surface of the 90-foot right of way which was acquired in fee simple might be paved and constitute part of the Market street extension; the latter to bring rapid transit service to those residential tracts around Laguna Honda station, already well along toward development. At Laguna Honda station connection will later be made with the future Seventh avenue car line.



FRONT ELEVATION, LAGUNA HONDA STATION, TWIN PEAKS TUNNEL.
M. M. O'Shaughnessy, City Engineer.



FLOOR PLAN, LAGUNA HONDA STATION, TWIN PEAKS TUNNEL.
M. M. O'Shaughnessy, City Engineer.

Laguna Honda station is a reinforced concrete structure situated 3,000 feet from the west portal at the summit of the grades. Its lower part is an expanded section of the tunnel lining, with two platforms, one on either side, extending the full length of 300 feet to accommodate four-car trains on each track. Three elevators on the north side afford communication with the surface sixty-two feet above. Passengers reach the south platform by traversing a passageway over the arch and stairway leading down therefrom. On the surface a superstructure to serve as a depot is to be erected, the architecture of which will be in keeping with the high-class residences being constructed in this vicinity. At the floor of the tunnel the station is 300 feet long by 44 feet wide, with an arch thickness of 3 feet and invert thickness of 26 inches.

Eureka Valley station, an underground structure of steel frame imbedded in concrete, is situated 300 feet west of the east portal. Like the Laguna Honda station, it is an expanded stretch of the tunnel, is 300 feet long by 52 feet 6 inches wide and has two platforms to accommodate four-car trains. At each corner of the roof slab are openings for stairways to the street level. Ornamental kiosks will offer covering and entrances to these stairways. In designing this station future connections were borne in mind, one with a Mission-Sunset tunnel to have its southerly termination at this station and to run in a general northerly direction under Seventeenth street and another with a subway in Market street.

There are two ventilating intake stations, each equipped with a set of blowers. One plant is located at Eighteenth and Hattie streets and the other in the Relief Home Tract, 4,600 feet east of the west portal. The arched portion of the tunnel is constructed with a ceiling slab, the compartment above this slab is to be used as an air duct, 2 feet square openings being left in the slab at intervals of 100 feet as outlets to the tunnel for the forced air. Shutters over these openings permit the regulating of the air flow.

Drainage tile imbedded in the concrete walls and leading to a center drain in the ballast will carry off the seepage water. Power and lighting ducts are also imbedded in the side walls, access to same being arranged for every 400 feet on each side in deep niches. Between these large recesses, at 50-foot centers, are refuge niches of smaller dimensions.

Material was excavated at the west approach by means of steam shovels, loaded into dump carts and spread in filling a near-by ravine, the average haul to which was one-quarter of a mile. Scrapers removed about 11,500 cubic yards from the surface over the 478 feet of tunnel adjacent to the west portal, the cut here ranging from 30 to 50 feet. Steam shovels then brought the excavation 35,000 cubic yards to invert grade, dump carts conveying spoil to dump mentioned above. When this section of the tunnel was completed the material previously removed with scrapers was backfilled with a drag-line scraper. Tunneling was then started and continued for a distance of 2,500 feet, when it broke through into the open-cut excavation for Laguna Honda station and 22 feet of tunnel at either end thereof.

All tunneling to date has been done by the wall-plate drift method, with solid timbering. Three parallel drifts were kept 24 feet in advance of the next operation; one of these was driven at the key, the cap of the drift timbers being high enough to permit the setting of the crown segment, the other two were driven, one on each side, with bottoms at spring line level. A fourth drift at invert grade for drainage purposes was kept about 600 feet ahead of the main excavation west of Laguna Honda station. Wall plates cut from 12x14-inch timber were set in the two side drifts and then the

ground between drifts was opened for a distance along length of tunnel of from 2 to 4 feet, dependent upon nature of soil. The seven 12x12-inch timber segments were then set, one springing from each wall plate, one on each side of the crown segment and one between on each side to complete the set. A bench the width of the tunnel between this timber lining and the spring line is then excavated; two other benches occur in the opening of the ground below. Under the wall plates temporary plumb posts were set, the bottoms of which were about the level of the second bench. Side trenches were deepened and these posts replaced by permanent ones resting on foot blocks, after which the third bench was cut. Invert excavation follows the concreting of walls and arch, trenches being made for the wall footings and a key joint being provided for the invert connection. The soft earth section requires 1,200 feet B.M. of timber and 39 cubic yards of excavation per lineal foot. Muck placed in cars was hauled by mules to the dump in the ravine at the west end. At the east end the muck was conveyed to the surface in cars by means of an endless chain termed an escalator, through an opening left in the roof slab of the subway section, whence it was carried and used as backfill over this section. When this backfilling was completed motor trucks were loaded right at the east face and used the completed tube as a street, emerged at the east portal and carried the muck to Islais Creek District, four miles distant, to fill swamp lands. The poisonous gases from the exhaust of the motor trucks have caused the abandonment of this scheme, since which time cars have been hauled from the face by mules and conveyed to the top of bunkers, into which they are dumped on an automatic electrically operated elevator situated in the slab opening originally occupied by the escalator.

A brick-lined water duct of the Spring Valley Water Company constructed in 1865 crossed at a sharp angle eight feet above the tunnel arch, about 1,800 feet from the west portal. It was conveyed by means of a bypass over the completed tunnel. A shaft was sunk, the water duct tapped by a 30-inch pipe, which ran west 275 feet in a drift previously driven, crossed the tunnel at right angles and connected with the original duct again. Later the water was permitted to follow its original course.

Excavation for Laguna Honda station and 22 feet of tunnel section on each end was done in open cut, the maximum depth being 70 feet. Steam shovels carried the cut to within 15 feet of rail grade, the sides of the pit being retained by piles. Trenches were then dug by hand for the side walls and footings of the station, after which the concreting was done and then the core of earth was removed. The waste material, a sandy clay, hauled an average distance of one-third of a mile in motor trucks, was used in filling low portions of the valley in which the station is built.

Because of an ascending grade, excavation between the vent shaft and the Laguna Honda station was started from the former. The shaft, when completed, will have an inside diameter of 13 feet, but the excavation was made 20x32 feet so as to take in full width of tunnel section and to permit of construction of forms for concreting. From the bottom of this shaft, which was 110 feet deep through water-bearing sand and timbered with piles held by 12x12 bracing and walings hung with steel hangers, a drift was carried 300 feet westerly at invert grade through sandstone, when it broke through the sandstone into a water-bearing sand, causing 300,000 gallons per day to be lifted out at the shaft. Another drift was then started and kept in the sandstone until after the sand deposit was passed, when the second drift was brought up to line with the first one. Easterly from Laguna Honda, tunneling has been projected over 414 feet on the descend-

ing grade toward the vent shaft, the drift previously driven draining the ground penetrated.

Due to the fact that the ground opened was a filled in creek bed, the excavation from where the tunneling goes underground at the east end to 500 feet easterly therefrom, some 30,000 cubic yards removed by pick and shovel, was done between two rows of piles and heavy timbering with the necessary cross braces. The remaining open cut section, 1,500 feet, on the east end, requiring no timbering, was done by steam shovels, the cut ranging from 15 to 40 feet, was made in two benches in the deep stretch; 100,000 cubic yards of surplus in auto trucks was hauled an average of four miles. The east approach is 29 feet wide between two reinforced concrete retaining walls.

The timber segments and plumb posts act as the outer forms for the concrete lining of the tunnel. Inside forms for the footings are in 8-foot sections of timber. Bolts are imbedded in the concrete footings for the securing of a 6x6-inch timber stringer to hold the ribs of the side walls and ceiling slab steel forms. These consist of 3/16-inch steel plates stiffened by angle iron ribs 2 feet on centers. They are hinged at the junction of each side with the ceiling slab, are divided in the center, and have no cross bracing, thus avoiding obstructing the tunnel space. These collapsible forms are permitted to remain in place seven days, when from a timber platform, mounted on four posts braced between by trusses, resting on wheels which operate on a rail near each footing, four jacks engage the lowered forms and convey them to their new position, all other construction operations being unimpeded. Forms for the arch are of 2x6-inch timbers set longitudinally on 7-inch I beam ribs 30 inches on centers. All open cut forms were of timber, those for the two-compartment subway being in 8-foot sections and in four parts to each tube.

The tunnel concrete consists of ¾ cubic foot of river sand and 1½ cubic feet of bank sand to each sack of cement and sufficient rock added so that the mortar fills the voids—which ranges between 5 and 5½ cubic feet, according to the rock used. Eight pounds of hydrated lime to every 100 pounds of cement was mixed dry for waterproofing.

All open cut concrete was mixed in standard rotary mixers placed on the edge of the bank, whence it was conveyed generally by gravity in chutes to the forms. Buggies conveyed the concrete to the forms when the distance was too great to be negotiated by chutes; this, however, was kept at a minimum. A pneumatic system of placing the concrete is in use now for construction of the entire tunnel lining. Before installing this system a small section of the lining at the west end was placed by hand and 140 feet of arch was constructed of brick.

There are two complete pneumatic mixing plants, one near the west end and the other close to where underground work starts on the east end. On the surface are located rock and sand bunkers which connect with a short concrete-lined shaft leading to the mixer set up on the ceiling slab. Cement is also delivered through the shaft by gravity. The mixer consists of a steel cylinder whose bottom is a tapering cone with a 90 degree special reducing elbow attached to its apex leading into the 8-inch steel conveying pipe which has flange joints bolted together and rests on the upper surface of the ceiling slab. The charge is dropped from the measuring hopper into the mixer through a door opening at the top, controlled by an air-operating piston. Water is turned on and the door is closed. The air valves, located at the side of the cylinder and one in the elbow, are then opened and the material is shot through the pipe, being given a rotary motion by two spiral

projections in the elbow. The force of placing the concrete direct into the forms had to be broken by a receiving hopper to protect the conduits and reinforcing steel. The absence of conduits and steel other than at the soffit permits the shooting of the concrete directly into place for the arch. At the west end, concrete has been conveyed pneumatically 2,500 feet up a 1.15 per cent grade and it is anticipated that a distance of 3,000 feet will be served up the 3 per cent grade from the east mixing plant.

The following quantities will give some idea of the magnitude of this work:

90,000 cubic yards concrete—
- 21,176 cubic yards sand;
- 49,411 cubic yards rock;
- 63,526 barrels cement;
- 1,016 tons hydrated lime.

2,500 tons of steel rods.

13,000,000 B.F. lumber.

340 tons steel frame Eureka Valley station.

Required:

512,500 cubic yards excavation—
- 2,500 Laguna Honda ventilating shaft;
- 75,000 Laguna Honda station;
- 125,000 east open cut;
- 46,500 west open cut;
- 116,000 in tunnel (to date);
- 147,500 in tunnel (future).

The tunnel was designed and is being constructed under direction of M. M. O'Shaughnessy, City Engineer.

* * *

Mural Painting in Public Schools

In a recent issue the American Architect calls attention to the value of mural paintings as a form of decoration for school buildings. It says:

"To serve a patriotic purpose and to encourage a beautiful phase of the painter's art, the Education Committee of the London County Council has approved an offer to provide decorative paintings for the Council schools. The scheme of subjects will be to illustrate life and industry to the British Dominions.

"This method of decoration has been followed in the public schools of a great many cities in this country, particularly in New York. The results have proved so entirely satisfactory, as means of inculcating patriotism and arousing interest in the better forms of art, that as fast as possible each new school will receive some mural painting as a part of its decorative treatment.

"The competitions held by boards of education in this country have called forth efforts from some of our best artists and the results now in place in many of the later high schools are material evidence of the possibilities of mural painting, both educational and artistic."

* * *

An Architect's Son's Idea

"My father is an architect," said the new boy on the block, proudly.

"What does an architect do?" asked the boy next door.

"Oh, he tells people how to build their houses, and they have to pay him for telling them."

"Yes, but s'posin' they don't build the house the way he tells 'em to?"

"Why, then they have to pay him more money for changing the plans," replied the architect's son.—Chicago News.

A Few Don'ts for Concrete Contractors—and Architects, too.

UNLIKE any other structural material, reinforced concrete is manufactured in the field, and to this fact is due the somewhat uncertain results which are sometimes obtained. Elwyn E. Seelye in The American Architect writes:

As it is more economical and suitable than fireproofed steel in certain classes of construction, every architect and builder should be equipped with a knowledge of how to conduct reinforced concrete operations in a safe manner.

First, the design should be correct. The flexural, shearing, direct, temperature and shrinkage stresses should all be analyzed and provided for by a properly qualified engineer. With design we are not concerned at this time. Assuming a correct design as a basis, the practical man may proceed to construct with confidence if he will follow the directions laid down in this article.

First and most important is the cement, which should be Portland, manufactured preferably by a well known company. Cement should be tested as follows: From each shipment, after it has arrived at the site, take one sample of a quantity of about two quarts, made up by taking a small handful from every tenth bag. Ship this to a cement testing laboratory and request a chemical and physical test according to the Am. Soc. C. E. standard tests. The laboratory report will call attention to any deviations from the standard requirements.

Slow setting or too rapid setting of concrete are faults often met with in the field. The causes are often obscure, but too little lime will cause slow setting. Or the proportion of silica to iron and alumina if too high will cause too slow a set.

A rapid set is objectionable because the time for placing same may be too short and the coefficient of shrinkage is apt to be too high, causing cracks.

Cement may not set up properly because it has become partially hydrated. Consequently cement should be tested *after* arrival on the site and shortly before using, and should always be stored in a waterproof shed.

Another cause of slow setting and a serious one is the occurrence of organic matter in the sand.

Sand should approximate a clean quartz and it should not contain more than 7 per cent loam. The percentage of loam may be determined by shaking the sand in a milk bottle, pouring off the wash into another bottle and allowing same to settle. The relative heights of sand and loam may then be scaled off and the relative amounts determined.

The occurrence of mica in sand is objectionable as it is liable to cause disintegration. The occurrence of pyrites is objectionable because of possible chemical action. If sand is very fine, it is to be looked on with suspicion because it is liable to lead to disintegration. Sand formed by breaking up soft rock is to be avoided.

Broken stone should be of a clean hard rock, preferably trap. The occurrence of mica or pyrites renders stone objectionable.

Gravel should be of a clean quartz or hard waterworn pebble.

Broken blast furnace slag should be looked upon with suspicion because of its high porosity, possible chemical reaction, and because the modulus of elasticity of slag concrete will vary from the constant assumed by the designer.

The maximum size of stone for reinforced concrete requiring a distribution around the steel should pass a ¾-in. sieve. The material is preferably graded from a small to a large size. A well-graded aggregate produces a

denser, more waterproof and stronger concrete than one in which the aggregate is of uniform size.

Aggregates should be free from loam, as the latter is injurious to concrete. They should be free from sand to simplify the process of proportioning.

The specifications generally call for a ratio of one part cement, two parts sand and four parts stone or gravel by volume for reinforced concrete. A better method is to measure the voids in the stone or gravel and provide enough sand to fill the interstices. In the same way measure the voids of the sand and provide enough cement to fill them.

A simple method of determining the volume of voids is to take a cubic foot of stone or sand and soak it. Then drain same. Place the cubic foot of damp material in a watertight receptacle, and weigh the water which it takes to fill the voids. Divide the weight of water by the constant 62.5 and the volume of filling necessary will be obtained.

The water should be clean and fresh and in sufficient quantity to make what is well named a "quaking" mixture.

The mixer should be what is known as a "batch" mixer. It generally consists of a drum in which the ingredients are placed and rotated. The process is assisted by curved guides and should be continued for at least one minute, and always until the mixing becomes homogeneous, and until the particles of sand are covered with cement and the stone or gravel are well coated with mortar.

A practical method should be adopted to insure that the correct proportions shall at all times go into the concrete. Here lies a danger. A standard batch mixer will hold two bags of cement, four cubic feet of sand and eight cubic feet of stone or gravel.

Both bags of cement should be introduced at one time, as if introduced alternately, one may be forgotten. Cement bags should be well shaken out. Often the cement and sand is measured by bringing up barrows of material, and depending upon the number of these to measure the amount of coarse and fine aggregate in each batch. This is a very loose method, and the author prefers two hoppers, which are filled, one with sand and the other with stone.

The storage bins must be entirely closed off before the aggregate is admitted to the mixer, otherwise more than the allowable aggregate will find its way into the batch, especially if the contractor has a tendency to economize on cement. Many other methods of proportioning are in vogue, and the inspector must use judgment in approving a method.

A common cause of accident is the use of improperly designed forms. The dead weight of concrete should be calculated, and all compression should be proportioned accordingly. The unsupported height of such struts should be taken into consideration, and where this is excessive, bracing at the middle or third points should be resorted to. The caps and joists should bear directly on top of the vertical members, and in no case should heavy loads be carried by spiking.

The lateral pressures due to the hydraulic qualities and wedging action by spading should be duly taken care of by means of wire ties and bracing. This is especially great in deep girders and in columns. Columns should be poured slowly for this reason.

Forms should be constructed to remain tight, as a loss of the finer particles is injurious to the concrete and tends to produce voids. If forms deflect, the finished work is unsightly.

In the case of the first tier where the uprights rest on soil, there is grave danger of settlement due to the load applied and the gradual softening of the ground. If this settlement occures after the initial set, serious cracks will

occur. To obviate this, mudsills should be placed under all uprights and opposed wedges placed between the uprights and the struts. The forms should be carefully watched with a level and any points indicating settlement should be wedged up. This wedging up should not be carried on after the concrete has obtained its initial set.

The interior surfaces of the forms should be oiled to obviate swelling and warping.

On the exterior of a concrete structure and elsewhere it is desired to have a finished surface free from marks and imperfections, it will be essential to expose the surfaces for the finishing mason while the concrete is still friable. For this purpose the forms should be so constructed that they may be removed without disturbing the main supporting members.

The concrete elevating tower and its guys should be free from the structure so as not to cause vibration, during the process of setting.

It should be borne in mind that the failure of any portion of the forms will cause impact on the floor below and may result in a serious accident.

Before allowing concrete to be placed it is highly important for the inspector to assure himself that the beam and column forms are according to the sizes shown on plans. Plumb all column forms. An interior column should not be more than ½-inch out of plumb and face columns where sash is to be placed should be plumbed and spaced with the utmost accuracy.

The sizes of beam and girder forms should be checked up with that shown on the plans.

The sizes of steel should be carefully checked with especial attention being paid to the effective depth of the beam, i. e., the distance from the top surface of the concrete to the center of gravity of the reinforcing steel. The beam steel should be wedged up with concrete blocks cast for the purpose or suspended upon stirrups so that the requisite space will be maintained under the bars of the concrete soffit protection. Bars should be carefully separated so that no voids will occur between the bars and so that the bond will be developed.

All stirrups and bars should be accurately spaced and wired to insure against displacement during the concreting operation. The main beam reinforcement should extend well on to the column or wall bearing. Indeed, it is advisable for this reinforcement to lap or be spliced with dowels as the shrinkage stresses before the beam is stripped may cause a crack in the underside of the beam at the column.

It should be borne in mind that the compression area of a beam or girder extends well into the slab, and consequently openings should never be permitted adjacent to both sides of a girder or beam and on one side only where called for on the plans.

Great pains should be taken to see that the reinforcing steel in footings is placed in the right surface. A cantilever footing requires reinforcement in the bottom while a combined footing requires it in the top.

It is reported that on one job after a floor was poured, an extra beam frame was left over and it was discovered that the beam where this was to have gone was poured without it.

All column forms should be provided with a slide door at the base for the purpose of removing shavings. This should be kept open until the barrow of concrete is standing over it ready for pouring.

Particular care should be taken to see that the footing is free from loam, as in another instance it is reported that a six-story building column was found to be supported on the steel bars because an inch of loam covered the column footing when it was poured.

Column forms should be tight at the bottom, as accidents have occurred by the fine aggregate seeping out and leaving the column at the base standing on a loose gravel. This is an important point, and the many columns when stripped show a tendency to this fault.

Columns and beams should be flushed out with water before pouring to clean the surfaces and improve the bond. Column concrete should be tamped from the top with a long wooden strip, and great care should be taken to see that the concrete flows around the outside of the reinforcing bars and hooping. There is a tendency for the concrete to catch on the horizontal ties and leave voids just beneath same.

A column should be poured slowly so that the process of setting may relieve the hydraulic head and prevent the bursting or warping of the forms.

As to freezing weather, the writer feels that the pouring of reinforced concrete where the temperature is below 32 degrees Fahrenheit should never be permitted. In the case of mass concrete the heating of the water, sand or aggregate, or the use of calcium chloride in the water, will permit concreting at temperatures below freezing.

If concrete is frozen before initial set, it will never recover, and should be replaced. If it is frozen after initial set, but before final set, it may recover 80 per cent of its normal strength if it thaws out gradually.

After the concrete has been poured, follow the processes of removing the forms, finishing and testing.

This is the danger zone, and the following "don't" might be suggested:

1. Don't remove forms until the concrete is thoroughly set and rings like a stone when struck with a hammer.
2. Don't mistake frozen concrete for concrete thoroughly set.
3. Don't remove permanently shores under beams and girders for at least three stories below the next floor to be poured.
4. Don't permit the placing of a cinder fill on the roof until the roof concrete is thoroughly hard.
5. Don't permit heavy sections of ceiling forms to be dropped onto the floor below.
6. Don't permit heavy concentrated loads of material or machinery on "green" concrete floors.
7. Don't accept structural work which exhibits considerable voids or places where the cement and sand is lacking around the coarse aggregate.

If the inspector is in doubt about the quality of a portion of the work he should order a test. This test should be made by a load of at least 1½ times the live load. A beam should not show a deflection of more than one six-hundredth of the span.

The test should be conducted with due regard to the safety of all concerned and the writer suggests the use of shores slacked off about ⅛-inch from the beam soffit.

The deflection may be measured by a level or by a lever pointer which will magnify the deflection.

To sum up:

Watch the ingredients.
Watch the mixing.
Check the placing of steel and sizes of forms.
Watch the strength of forms.
Avoid frozen concrete.
Never strip concrete until it gives physical evidence of having set.
Test a doubtful construction or condemn it, and:
Your work will endure with the Pyramids.

Fire and Smoke-proof Stairways

By FRANK HAUSLE, Architect.

THE construction of stairways as a safe exit in case of emergency is still the unsolved problem which has puzzled the builders of the past and is likely to continue to perplex them in the future. For several years there was a remarkable desire for a betterment in stair construction among architects, which resulted in the construction of fireproof stairways, enclosed with fireproof or fire-retarding material, and provided with self-closing, fire-resisting doors. This may be recognized as an improvement in construction of modern buildings. But with the increase in the height of buildings, the common fireproof stairway does not satisfy the demand of a safe exit; on the contrary, the fireproof stairway enclosure will act as a veritable chimney flue, connected to each story by its door openings.

The sole protection depends upon the door or doors which by all means are of secondary value. Therefore, most of the new laws and building codes require for tall buildings tower stairways, separated from the rest of the building by fire walls and provided with outside balconies or vestibules for communication between the floors of the building and the stairway to break the air current and to avoid heated air or smoke from drifting from any part of the building into the staircase. Tower stairways are no new invention; they were constructed long before Columbus set his foot upon the land of this western hemisphere.

Comparing tower stairways with outside fire escapes in regard to architecture, we may say it turned from bad to worse. The outside iron fire escapes are a shameful disgrace and a testimonial of poor architecture bestowed upon the building. Its value as a safe means of egress depends upon uncontrollable conditions. We know from experience that more persons have lost their lives by them than were saved.

The disadvantages of the tower stairway, now recommended by many laws, in lieu of fire escapes, are its location at the exterior of the building, where it obstructs a valuable space of frontage and light, and by situating the stairway at an extreme end of the building a large, valuable floor area is wasted by the required hallways. As to its value as a safe exit, such exterior tower stairways, which are solely to be used in case of emergency, depend upon an easy access and serviceable condition, and to maintain this it must be kept under constant control. But a steady control means an additional expense of labor, and as there may be no fire within tens of years, such expense may be reduced to a municipal inspection possibly once a year. In the meantime tenants come and go, and all kinds of rubbish may find its place in the tower. The doors which are exposed to weather may soon be out of working order, and, besides, who in town will ever notice a stairway at an extreme end of a building?

The construction of a tower stairway is at a remarkable cost, and the loss of the most valuable floor area makes it more expensive. A building is proposed to be planned and constructed for the occupancy of the available floor area, but such exterior tower stairways, which become a useless and costly appendix to a building, discredit the skill of architecture. Neither the outside iron fire escape nor the exterior tower stairway improve architecture in regard to safe exits. What is needed is a stairway serviceable for daily use as well as in case of emergency, where the public has it under steady control; a stairway which can be located anywhere within the build-

ing to suit the accommodation most favorably; a stairway which offers a safe and serviceable passage to and from all stories above or below any floor where a fire may rage, for the public and firemen.

The fireproof public stairway already constructed by architects was the first step in this direction. To make these stairs also smokeproof we have to observe the elementary rules of air and fire. Heated air expands in all directions if enclosed, but if freed its current is upward, carrying with it smoke and flames. To prevent it from spreading into the staircase it is necessary to provide a proper check and contrary air pressure, balancing off a sudden expansion of air. This can be obtained by lowering the stairway landing platforms below the respective floor levels to check the air current from the floor into the staircase and then to provide a ventilation shaft of sufficient size to convey the heated air out of the building in a direction opposite to the stairway. This ventilation shaft can also be used for daily services in airing the building, which would improve the sanitary condition.

Architecture is the art and skill to house people safely, protected against the elements for their health and welfare.—American Contractor.

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Program for State Building Competition

COPIES of the program for the competition for the selection of an architect for the San Francisco state building have been received by sixty or more applicants throughout the state. The program is very fully outlined in a book of some twenty pages. The preliminary competition will close November 15, 1916. Only pencil drawings, including floor plans and one elevation on a scale of 1/16 inch will be required in this competition. Each competitor will be expected to submit at this time a statement regarding his education and professional training and experience, a list of not exceeding five buildings which he has executed, and two photographs and the complete plans and specifications for one of these buildings. The competition will be conducted in accordance with the rules of the American Institute of Architects. The jury will be composed of the Governor, Chief Justice of Supreme Court, Attorney-General, chairman of the Board of Control and three architects to be selected by the Board of Control from a list of five names of members of the two California chapters of the A. I. A., not more than three of which shall be from one chapter.

Eight architects will be chosen from among those submitting preliminary sketches, for the final competition. These eight shall prove their fitness by their credentials and they alone will receive remuneration, the commission for the work at 6 per cent going to the architect who is first choice and $1,000 each to the other seven. Drawings for the final competition will be rendered in ink and will comprise floor plans, elevations and sections on a scale of 1/16 inch. The final competition will close February 15, 1917, and the jury will be the same as in the preliminary competition.

An appropriation of $1,000,000 has been made for the proposed state building. For the purpose of the competition the cost is estimated at 50c per cubic foot and the maximum of cubical contents is fixed at 1,800,000 cubic feet. Any excess above this maximum will disqualify a competitor. The building will be erected on the Civic Center in San Francisco and the style of architecture must be in harmony with the City Hall, Public Library and Auditorium which are grouped about the public square. These buildings are all classical in design and faced with California granite.

RESIDENCE APARTMENT HOUSE, SAN FRANCISCO.
Kenneth MacDonald, Architect.

A Fifteen Story Residence Apartment House

UPON a site on the north line of Jackson street, east of Cherry street, San Francisco, and overlooking the bay, Harvey Toy and his associates plan to erect an apartment building of fifteen stories, containing the latest ideas in apartments and intended for exclusive tenant-owners.

Plans for the building have been made by Kenneth Macdonald, Jr., architect of a number of unique structures in San Francisco. The enterprise is being worked out on the community basis, so that those purchasing apartments in the building will be stockholders and participate in the earnings of the company. Such expenses as heating, hot water, ice, cleaning, insurance and service will be prorated.

The building will be of the Class A type, with steel frame and thorough fireproof construction, and its interior will be finished in selected antique hardwood, in the same character of design as used in the finest residences. A combined Pompeian garden, dance hall, men's and women's cafes and tea room will occupy the roof, and a novel feature will be an exclusive cafe for women.

The first story is arranged for garage space, gasoline storage, oil, etc., and apartments for garage attendants, with a small repair shop. The mezzanine floor will be divided into twenty-eight rooms for Oriental servants. The second to the fifteenth floors, inclusive, will be devoted to twenty-eight apartments of eight rooms each.

Living-rooms will be in the Italian Renaissance and command views of the bay and Golden Gate, which the conservatory and dining-room will likewise have. All bedrooms will have a southern exposure and each will have a communicating bath.

Equipment for the comfort and luxury of occupants of the apartments will be installed, as it is the aim of the promoters to have the building represent the highest state of perfection in apartment house planning.

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"Floor for Doctors" A New Skyscraper Wrinkle

An interesting architectural development in connection with recent office building construction is the setting aside of a floor especially equipped for the exclusive use of physicians, surgeons and dentists. A feature of this kind is found in the ninth floor of the Third National Bank Building in Springfield, Mass., which was designed and erected by Hoggson Bros. of New York City, who have made an extensive study of the specialized building question. The floor in the building named has been fitted up as offices for one, two, three or any number of associated practitioners, with operating rooms, laboratories and rest rooms, as may be required, opening from the reception room used in common.

Here the associated doctors may have the combined service of a staff of assistants consisting of nurses, a secretary and a maid, which under the ordinary arrangement of offices is often prohibitory by reason of the expense. There is provided gas, electric light and power, compressed air, and special basins with hot and cold water under pedal control. In each dental laboratory are suitable work benches, compressed air, gas, electric light and power outlets, hot and cold water and other necessary devices and equipment.—Building Age.

Architects Welcome Real "Service"

By O. P. SHELLEY.*

LET me preface these remarks by stating frankly that I have very generally found architects most courteous and pleasant to deal with, exceptionally so when you remember we all have our mannerisms and peculiarities, and far be it from me to cast the first stone—I feel my own shortcomings too keenly. I state my own feelings so clearly because the article† in the July issue of The Architect and Engineer on architects and salesmen put me in mind of one of the all too few remembrances of a good Quaker upbringing, that remark of the old Quaker to his wife: "Everybody's queer but me and thee and sometimes I think even thee is a little queer."

It seems like an anachronism in this day and age to have modern selling methods questioned as to their soundness and the only cause for this is a confusion as to what salesmanship is or should be, and we will speak of this and its relation to the architect.

Salesmanship is, of course, divided into printed advertisements, commonly spoken of as advertising, general letters (i. e., where the same letter is sent to many), individual letters and personal calls (i. e., the salesman) and salesmanship should be defined and kept in mind as "the art of creating business."

The vast scope of the printed advertisement, due to large circulation, and its certainty of being seen by nearly every reader, gives the advertisement a power that can be neither ignored nor replaced, but its very nature makes it general in appeal, and the business that stops with the printed page only will either create a vague impression or will merely generate business for a more wide-awake competitor. When an architect gets a job started he is too busy to write hither and thither to find out if something that appealed to him in a general way will suit his present design. Also it is indubitably a fact that only the most intimate knowledge of any certain material gives that necessary intuition as to its suitability and availability in a given case.

So you see advertising alone cannot cover everything and general letters have much the same limitations. You can narrow the appeal and restrict the class of recipients, but you cannot make them individual. Personal letters are wonderfully effective, but if the first letter does not suggest and work out in its entirety some problem, then it devolves into correspondence, something most irksome and also expensive for the architect, and at best too slow and cumbersome.

The personal call (i. e., the salesman) is left, and that is, or at least may be, the most potent business getter and time saver of all. Architects do not object to real salesmen—those who create business—but they do object to the mass of order takers who pester them. "Salesman" is a much abused word. The clerk who ties up sugar when it is asked for, without even suggesting a second purchase, calls himself a "salesman"; so does the order clerk who takes down phone orders, and so it goes. To appeal to architects you must know all about **your** subject, which means more than they themselves know, and more than your competitor knows. Yet the number of men calling on architects as "salesmen" who know enough about their goods to really render service is startlingly small.

*Sales Engineer the Pacific Building Materials Company, San Francisco.

†"Are Architects Too Conservative?" by Frederick Jennings.

It is very certain that with the average building material service given before the sale is made is more valuable than service given after the sale, and this is a point not realized by most salesmen.

The architect of today is, above all things, a practical man—the day of the mere artist has vanished—and the best architects are good business men, so to claim that they do not wish to do business in a modern business way is ridiculous. As long as an architect meets only that salesmanship which is really the art of creating business it is very certain that he will continue to give it a uniformly courteous reception.

* * *

The Mission of the Architect

WHEN a little ship or a big ship, manned by skilled mariners and able seamen, comes to port, she stops outside the bar for a pilot to take her into the harbor. Not because he knows how to handle the ship any better than the crew, but because he knows his business—the safe way into the port—and mariners of the deep do not.

The shoals, reefs, tides and currents of the building game are just as dangerous, financially, and far more numerous than those of any harbor in existence. And even if the voyager is not in any danger of his life, his other troubles will probably cause him to regret the lack of this risk.

Just as the pilot guides the ship and its crew to a safe anchorage, so the contractor guided and assisted by the architect carries the builder's plans to a happy consummation, piloting them safely through the many dangers that beset all unguided builders.

In the first place the architect gives individuality to your house, however simple, and assures correctness of form and detail, that only education and experience can give.

If you have ideas of your own, he expresses them for you, blends and harmonizes them into the style that best suits them and adapts them to the surroundings and also your pocket.

* * *

Now there are some persons wise enough to get a book of the best plans of the greatest architects (that's what the fellow who sold you said) and they choose their plans from them. Well, these plans are—if an architect ever saw them—a job lot, that either wouldn't sell at all or have been sold too often, out of date, and sold in a bunch to save having to pay the janitor extra for burning. Don't you know that if they were any good that they would cost you what an architect's plans would and not be sold for thirty cents a gross? But if you are willing to use them, you are not man enough to tell what you are paying for, and if you draw your own contract you are liable to leave out such items as a roof, lighting, bath tubs, or other similar unimportant details.

No, don't try to beat another man at his own game. The chances are that you won't win. The architect can be had for a small fee, which he earns in the increased beauty and utility of your building; in insuring the use of proper materials and construction; in the relief to you from worry; in the protection from loss through incompetence, fraud or carelessness; in the increased value of your property, and which fee he saves many times to you by his knowledge of all the economies in construction and by securing competitive bids on the same plans and specifications to pilot you through that troubled and dangerous water that borders the Sea of Dreams into the calm waters of the Harbor of Realization.—W. Elliott Dunwody, Jr., in the Industrial Index.

Screens in the Home

MANY people do not realize how much life is simplified by screens. To begin at the front door: If there is not a vestibule, a screen arranged a few feet from the front door will give a feeling of privacy, and this is especially necessary where the door opens directly into the living room. There can be a chair and small table placed against it for waiting messengers, and the people on the living-room side of the screen need not be disturbed at all. This screen may be as handsome or as simple as you wish, but it must accord perfectly with the room. The color and style must harmonize; in fact, it must prove itself a necessary part of the scheme. It may be of leather or paneled wood, or some fabric tacked to the frame. Heavy dull gold Japanese paper makes beautiful screens, and is a fine background for a stenciled or painted design. The same material of which the curtains are made may be used for the screen covering.

A carpenter can make a frame any desired size, and paint or stain it, or cover the outer edges with cloth or leather, so no wood will show when the outside covering is put on. A three-fold or four-fold screen is generally used, and an average size is 5½x20 inches for each leaf of a four-fold screen. A three-fold screen is wider, say from 24 to 30 inches for each leaf. They cost to make from $1 to $3 a leaf, and the painting and covering would be extra. They must always be strong and well braced and heavy enough not to tip over easily, and should have double hinges. If paper is to be used, the frame must have coarse unbleached muslin stretched on it, and the paper is pasted to that just as if it were the wall.

Another useful screen in a large living room that is used by all the family is a low one by the owner's small private desk. This gives her a chance to do her household writing in comparative peace, and makes a pretty corner. A fire screen of glass may be added, so we may watch the cheering blaze and not feel the heat.

A dining-room screen by the pantry door is a necessity, as it hides the household machinery and gives a place for an extra serving table behind it. Leather makes one of the finest and most dignified screens possible for dining-rooms, living-rooms, halls and libraries.

Bedroom screens may be covered with cretonne, and are really lovely. They can be placed at the foot of the bed to keep the light from the sleeper's eyes, they may be placed in front of the bathroom door and have hooks on the back to hold many small and useful things; they are a great comfort in case of sickness, for the bed can be protected and the door left open.

A nursery screen is often necessary and one which gives vast pleasure is a heavy frame covered with denim, on which the children are allowed to paste pictures. There may be a certain amount of oversight about it, but not enough to take the "snap" out, for children dearly love their own artistic ideas.

Porch screens are useful, but they must be heavy enough to stand in spite of the wind, and serviceable enough not to be spoiled by a sudden shower. Chinese matting stretched on a wooden frame makes a good kind. A wicker screen is attractive with wicker porch furniture.

There is a long list of small screens which are pretty and useful. One is a sewing screen. It is about 24 inches high, two-fold, and has handles on the top so it can be carried easily from room to room. The frame is first covered with cretonne. The inside is cleverly fitted with bags and cushions, pins for spools, scissors, tape measures and all other needfuls.

Another small and useful screen is a tea-kettle screen. With out-of-door meals these screens are invaluable. They are usually a curved piece of silver about seven inches high, and made on a half circle or oval large enough to fit around the kettle and protect the flames while leaving the front open.—Southern Architect and Building News.

* * *

Combination Brick and Concrete Roads Outlast All Others

FORTY-FOUR years ago the first brick road in the United States was constructed in Charleston, W. Va.

"The experience of the forty-four years," says the United States office of good roads, "has demonstrated that it is entirely practical to construct satisfactory brick roads."

"These roads," says Uncle Sam's experts, "now are giving general satisfaction, when properly constructed, and it is probable that their mileage will continue to increase rapidly."

The principal advantages of the brick road, according to the government road service, are:

1. Durability under practically all traffic conditions.
2. Easy traction and good foothold.
3. Easily maintained and kept clean.

The only disadvantage attributed to this type of road is the high initial cost. This is largely offset, it is figured, by the low maintenance and general stamina of the road.

The best type of brick road, in the opinion of the government road experts, is a good brick laid on a sand cushion, with a substantial concrete foundation.

The most essential factor in the building of a good brick road is the selection of a suitable brick. The United States road men recommend bricks made from shale and fire clays of the "lean" varieties. The shales are red, while the fire clays produce a light-colored road. The brick chosen should be hard, rough and uniform in size.

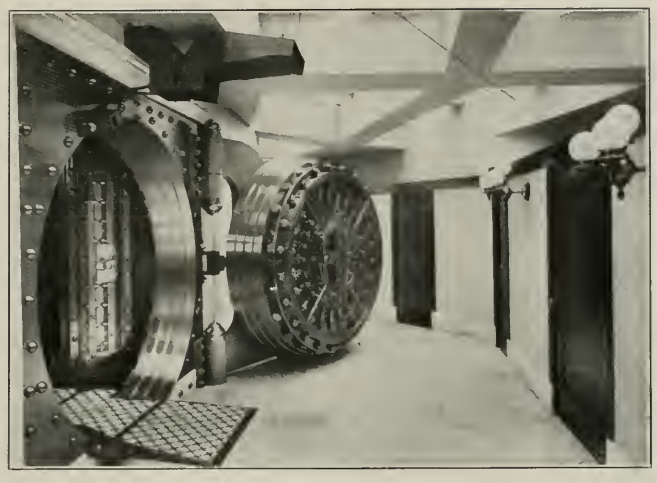
Although a definite speculation as to crushing strength is not necessary, good paving brick should withstand a pressure of from 15,000 to 20,000 pounds per square inch.

For the brick road a concrete foundation is advisable, but where the traffic is light, broken stone will often suffice. Should stone be used, it should be put on in courses, the largest stones at the bottom, and should be from eight to ten inches deep.

The more satisfactory concrete base may be a composition of one part Portland cement, three parts sand and five to seven parts broken stone or gravel. This should then be covered to a depth of two inches with a clean sand, spread dry. On this sand cushion the bricks are laid on edge and at right angles to the line of the road. Each alternate row should begin a half a brick in. Ramming and rolling complete the road.

DESIGN FOR GROUP OF SCHOOL BUILDINGS, STOCKTON
STONE & WRIGHT, ARCHITECTS

ENTRANCE, FIRST NATIONAL BANK, SAN FRANCISCO.
Willis Polk & Co., Architects.



VAULTS, FIRST NATIONAL BANK, SAN FRANCISCO.

First National Bank Entrance and Vaults

THE accompanying pictures of the First National Bank building, San Francisco, are interesting, one showing a detail of the spacious entrance at Post and Montgomery streets, while the other photograph shows the interior of the massive safe deposit vaults in the basement of the bank. The entrance picture illustrates the possibilities of night photography, the details being almost as sharp under the electric light rays as they would be under the glare of a mid-day sun.

Some idea of the strength of the safe deposit vaults in this bank may be had from the statement that the two vault doors alone weigh twenty-three tons apiece. They are made of solid armor plate, guaranteed to withstand the most crucial tests of fire and dynamite. The doors are automatically opened and closed by a time lock equipped with triple mechanism. There are twenty-four locking bolts which fasten the doors securely. The vault itself is 24 by 30 feet, with a capacity sufficient to store all the gold in San Francisco.

* * *

Merchants Exchange Building to be Extended

The fourteen-story San Francisco Merchants Exchange building is likely to be extended to Montgomery street, with the ground floor especially fitted up for the American National Bank. The corner lot is 60:9 by 137:6 and is the site of the defunct California Safe Deposit and Trust Company's building. Messrs. Willis Polk & Co., who designed the Merchants Exchange building, have prepared preliminary sketches for the proposed extension.

The Art of Planning

By FRANK H. HOLDEN.

THE art of planning, that is, the conception of a building plan and the development of its structural and aesthetic design, is called architecture. To apply the principles of architecture means the skillful employment of practical and artistic resources to the accomplishment of a fixed purpose, and to do so practically and comprehensively, as well as beautifully, is good design.

For the purposes of conveying the expression of design there are two graphic elements, the plan and its elevation; both are essential. The drawing of a plan, as a mere indication of the arrangement of utilitarian details, has no value unless it expresses a sense of solid content. Also, the pictorial delineation of the front of a building, no matter how excellently presented, fails unless expressing the purpose of its ground work.

The art of planning, therefore, demands the presence of a third dimension, as an indication of volume and the knowledge of phrasing it into readable form on paper. We have, then, in the mind of the designer as he starts to "spin and weave" a plan, not only the length and breadth of things as they appear on the drawing, but also the idea of the mass of the building as standing on that plan. This is expressed by the thickness of the walls, the distribution of the points of support, the size of the window and door openings and other essential construction elements, all gauged in proportionate value to each other, as well as to the various functions which they perform. These details, properly arranged and adjusted in relative sequence, are significant of their purpose, as well as the means of indicating the volume of the structure which the plan conveys. A drawing of a plan may therefore definitely denote whether the building in mass is low or high, and whether of wood, masonry or other construction.

The elevation or drawing of the outward appearance of a building, being the study of the vertical dimension of the plan, must be the artistic representation of what occurs behind its walls. It is illustrative of the practical functions of the plan and aims to establish in moulded material a definite expression of the purpose. It is consequently for this reason that there exists in our minds well defined types, which are as familiar to us as the letters of the alphabet, such as the dwelling, the bank, the church, the office building, railroad station. Each denotes its purpose.

There is further involved in the art of planning the ability to fulfill conditions imposed, to develop them skillfully according to requirements and to the end that convenience is found.

The solution of the layout constitutes the most important unit in design; the designer must understand the fundamental conditions of the problem in that these requirements may be arranged and disposed in an orderly manner. The largest degree of personal comfort and convenience in all their details must be considered in the best interests of those who are to occupy and use the building; the different spaces studied as to their relative sequence and value to each other.

The plan is the vital thing—on it depends the success of the building. In considering the arrangement of details there must be proper co-ordination of engineering principles, the economic employment of construction materials and the expert use of modern agencies of heating, ventilating and illuminating. Good design furthermore includes a thorough knowledge of economic values, so that the proper apportionment of costs may be made and that all items may be appropriate and orderly.

With essential construction elements, necessary to comfort and welfare, there further enters into the design of the building the indispensable knowledge of building materials. All that is strong and durable, and all that is beautiful, go to make up the colors of the designer's palette from which he may choose to form and beautify his artistic conception. The success of his effort depends on the judicious selection of those materials which most consistently fit the problem.

The extent of our country, embracing as it does different zones of climate with extremes of temperature and combined with the wide variation of the land's natural aspect, affords a scope of unlimited possibilities and a wide field for the development of original design. This tends to create many styles, each characteristic of its particular locality. Our life to-day, with its countless forms of industry, also offers the opportunity for the solution of new problems, and it is these overwhelmingly rich possibilities that confront the designer of to-day. He has the use of unlimited natural resources at his command to meet the demand for every requirement of the art of planning, thus laying the foundation for the creation of an architectural development such as history has never known. Such conditions constitute our foundations of style.

Art is advancing to-day as it has through the ages by the stepping stones of tradition; there is back of us the wealth of classic style, the glories of Greece and Rome, the imperishable beauty of the Renaissance. We have this fund of example to draw upon for inspiration, but we need not adopt or even adapt those forms which changing conditions have robbed of much of their value; we have only to realize the advantage of our natural gifts. Modern building conditions with such a background of precedent present a rare opportunity from which splendid types of architecture may be evolved. New modes of living are developing new styles, opportunities undreamed of are arising in the development of the truly typical American architecture.

* * *

Registration of Architects

A DEBATABLE point regarding the registration of architects was brought out by the report of the Committee on Legislation at the last convention of the American Institute of Architects. It is discussed in an article entitled "State Registration of Architects," by D. Everett Waid, who says in part:

"The report assumed that a registration law must be based on the power vested in the State to protect the public against unsafe buildings. It further took issue with most of such State laws, at least as they are being enforced, by assuming 'that public safety has no concern in those qualifications of the architect which enable him to practice a fine art, and that on such lines he should be no more subject to examination than is the painter or sculptor.'

"Whether the power which is founded on the right to protect life can be extended to protect the public against bad taste may be questioned, but such an attempt is made by refusing to admit to practice all who have not, in the opinion of the examiners, a proper knowledge of artistic design. That attempt is enforced by forbidding anyone except registered architects the right to file drawings and take out permits for building. Incidental abuses grew out of that law, such as the case of a carpenter who, desiring to build a shed or shop, took his drawing to a licensed architect, secured the impres-

sion of his seal for $5 and then was free to file his own drawing and obtain a permit.

"That such a law is drawn on a wrong basis is indicated by the fact that the Illinois law is now imperiled by legislation sought by the engineering profession in its behalf. If they succeed in their efforts, the architects may be in worse condition than if no license law whatever existed.

"The New York law for registration of architects is drawn on a different theory. It is an educational measure and its most important or all-important object is to raise the standard of qualifications of architects and thereby their efficiency and value to the public. Incidental to the purpose it prevents imposition on the public by providing that when it does employ an architect it shall be guaranteed some evidence that he is entitled to the name.

"But the New York law does not interfere with the right of any carpenter, builder, engineer, contractor or owner, to plan and erect any building for himself or others, provided he does not use the title 'architect.'

"The building laws and the building departments charged with the enforcement of the building laws should protect the public against unsafe construction. The architect must protect the public against bad design by the merit of his own. It is the only possible way. The profession has no right and should have no wish to legislate business into its control. If we cannot command the respect of the public without legislation and cannot sell our brains to willing purchasers, then architecture is in a bad way indeed."

* * *

Gas Company and the Architect

THE third mid-year conference of the National Commercial Gas Association was made notable by an address by Mr. D. Knickerbacker Boyd of Philadelphia on "How the Gas Company and the Architect Can Cooperate to the Best Advantage."

"I naturally approach this subject of cooperation," said Mr. Boyd, "from the standpoint of the architect and will suggest to you what you may do to assist us, leaving it to those members of your association who take part in the discussion to tell us in what respect the architects may assist you in accomplishing the results for which we are both aiming—the service of the public.

"Architects, unfortunately, are not familiar with all that you have been doing in the rendering of service to the owners and occupants of buildings. This is largely because you have not informed them. It can be said at the outset that architects ought to welcome your cooperation in securing for the owners of buildings and all occupants the fullest return for the investment and the greatest amount of comfort and convenience.

"It is true, however, that large buildings, and other kinds also, have been erected without provision for gas. My feeling is that the architects and owners of these buildings have done themselves an injustice, due, I should say, to a lack of foresight and of knowledge of the diversified uses to which gas may be put.

"You must not overlook the fact that your commodity is but one of a countless number of mediums with which an architect must deal in order to render a building completely ready for occupancy. About each of these he must know something—often a great deal. Do you realize what a task this imposes? While we all appear anxious to cooperate in rendering full-

est service to the occupants of buildings, the very first thing which you could do in this direction is to make our task lighter by furnishing us with information in regard to the installations necessary to make your product available for every possible use.

"This is the age of cooperation and of nationalization. You represent a great national industry and you ask our cooperation in utilizing its products to the greatest advantage of all. It ought to be very simple. We agree to cooperate and we ask you to furnish the information."

* * *

Cost of Applying Mortar with the Cement Gun*

THE upstream face of the Elephant Butte dam of the United States Reclamation Service is being waterproofed with Portland cement mortar mixed in the proportion of one part cement to two parts sand and applied with a cement gun in a coating about 1 inch thick. Advantage has been taken of rising water in the reservoir to work from rafts specially constructed for the purpose. There are two of these, each 9x13 feet, made of planking on a framework laid on and attached to sixteen oil barrels. One raft contains the machine, operator and helpers, small mixing box and a few sacks of cement and sand, while the other is loaded with cement and sand.

The coating is applied in horizontal strips about 10 feet high and the length of the dam at water level. The surface is first cleaned thoroughly with scrapers and wire brushes and is then gone over with a sandblast, using coarse sand, passed through the machine to obtain the necessary pressure. This roughens the surface sufficiently to cause the mortar to adhere to it. The surface is then thoroughly moistened with a hose and the mortar immediately applied. The mortar is put on in four layers, each about ¼ inch in thickness. It was found that a thicker coat than this applied on a vertical wall, without reinforcement, would, on account of its weight, slough off before setting. Each layer follows the preceding one before it has attained its final set, and so far there is no indication of a parting of the layers. Numerous samples taken from the face showed perfect adhesion to the concrete, it being impossible in every case to break the mortar from the concrete at the line of contact. The cost per square foot for the first 100,000 square feet of this coating is as follows:

Operating and repair work, including cost of air and water	$0.015
Staging, cleaning wall, moving, etc	.006
Cement	.024
Sand, including labor, screening and hauling (sand only 20c per cubic yard)	.007
Depreciation of gun and equipment	.020
Subtotal	$0.072
Overhead	.007
Total cost per square foot	$0.079

In using the cement gun the sand must be clean, sharp and not too fine. It must not be bone-dry, or trouble with feeding will occur. The air pressure should be about 30 pounds in the gun and the water pressure over 60 pounds. It has been figured at Elephant Butte that 30 feet of free air at 100 pounds pressure at the point of delivery to the gun and 10 gallons of water are required per minute.

*From the Reclamation Record.

The Value of Incomplete Estimates

THE increasing complexity of modern industry introduces so many variable factors into investigations of initial and running costs that a feeling has grown in some organizations that incomplete estimates are of little value in the determination of future policies, says the Engineering Record. Engineers meet this attitude from time to time in presenting studies of plant development, in analyzing before busy executives the economies of different operating methods, and in recommending specific action based upon necessarily incomplete test data. It is frequently assumed by clients that because some of the elements in a computation have to be selected arbitrarily, the results of the figuring are to be given little weight, and the outcome is often accordingly disadvantageous to the best interests of those who refuse to give proper credit to the assumptions and judgments of the expert adviser.

It ought not to be necessary to urge the real value in incomplete estimates in connection with engineering propositions, for the time-honored maxim that half a loaf is better than no bread applies forcibly in such cases, provided that the outside limits of the problem are recognized. There is the real difficulty, and it can best be overcome by carrying through the analysis in particular instances with maximum and minimum allowances for the uncertain factors involved. The sense of proportion in making studies of industrial cost is consequently invaluable, and it is this which is cultivated by the specialist in fore-casting the total expense of a program within a stated field of practice.

To illustrate, a central station desiring to install its service in a factory sends a force of power engineers to the spot, lists all the machines in use, determines the average and maximum power demands of the installation from the indicator cards taken at the engine cylinders, and after making a study of advisable rearrangements for the use of the motor drive, prepares an estimate of the yearly cost of operation under the new service, including fixed charges. The degree of completeness of the estimate is likely to vary a good deal according to the conditions present, but whether the data set forth are based almost entirely on tests or on existing records of the plant, some assumptions will inevitably have to be made before the report is finished. The reason is that the determination of total costs, including fixed charges, is not an arithmetical process pure and simple, but includes the application of skilled judgment, to the depreciation factor in particular, and often to such a question as the limit of fuel economy in installations of specified types and with prices of coal ranging between stated limits. Despite these uncertainties, some of which can be cleared away if enough time and money are expended in the work, a more or less hypothetical estimate may be sufficient to determine whether the existing plant should be continued or central station power substituted, and in such cases the problem is often solved without the refinements of investigation which theoretically at least should never be omitted in a determination of the issues.

The difference is that between an analysis which is thoroughly scientific and one which is sufficiently accurate for commercial purposes. Where to draw the line between the two is the critical decision for the engineer. His reputation depends upon his ability to weigh the factors involved and to avoid the unpleasant experience of having his results entirely vitiated by some overlooked condition. The proper line of attack in work of this kind is laborious; it requires a willingness to work out many estimates with the factors changed one by one or perhaps in groups; and finally, in relation to the influence of the report on the client, it calls for the preparation of estimates for the extreme conditions of the case and the careful marshalling

of assumptions in a form in which they can easily be checked or audited by an acute questioner. Engineers of broad-minded type realize that nothing is lost by setting forth such assumptions, either in the body of the report or in an appendix, in such manner that another engineer can weigh the work and compare the methods employed with his own. Nothing is intended in these comments to deprecate the making of tests in the field as a basis for report recommendations, but in engineering the question of cost should determine the expediency of the detailed practice followed, and a sound appreciation of the commercial side of industrial researches is a valuable asset in relation to the preparation of estimates.

* * *

The Engineer—A Constructive Criticism

AS I see it, says a writer in The Engineering News, one of the greatest faults of the engineer is that he relies too much on his technical training, and confines himself entirely to too small a field, taking little interest in the affairs of the day outside of his own chosen profession and not mixing with clubs and organizations as other business men do.

Surely there is no business or profession which is more certainly founded upon sound business principles than is engineering. "Engineering is the theory of economy" expressed in a few words. No engineering business can ever be truly successful until it takes on a sound business system. We have often heard that an engineer is "a man who can do for one dollar what any fool can do for two." How can this be true unless, in addition to technical engineering knowledge, a man employs business methods in his calculations and transactions?

Most engineers are inclined to lack confidence in themselves when it comes to mingling with men of affairs, or else their outward demeanor does not show that this is not the case. We cannot expect to always talk "shop," and in our intercourse with men it is exceedingly important to our success that we be able to converse on other subjects. It is the big, broad man who accomplishes things in this day and age, and we must enlarge our field and become conversant with the events of the day.

We have read a great deal of late in the engineering publications on the subject of public speaking by engineers. Right here is one of the greatest failings of the men in our profession. The engineer should train himself to speak in simple, well-selected, plain words, and be able to show his hearers the advantage to the community at large of engineering works. Surely there is no other profession which should be more interesting to the public than engineering, but the great trouble has been that we have not been trained to present our side of the case.

The engineer should be versed in legal procedure, labor conditions, social problems and all general questions of city, state and country. In order to be successful, he must be able to express himself in good, clear, sound English, and not simply sit back with the air that "I am an engineer and I can make no mistakes," or "you must take my word for it, for you would not understand even if I tried to explain, because you have no technical education."

I have found that the knowledge of legal procedure relative to public improvements which are constructed from funds derived from bond issues or special assessments is one of the most valuable assets.

The writer believes that technical schools could not make a better move as an improvement in their courses than to include one on public speaking. If every student of engineering were required every so often to deliver a lecture on his subjects he would soon lose his "stage fright," and this training would be of incalculable value in life later.

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY

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FREDERICK W. JONES - - *Editor*

Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION

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VOL. XLVI. SEPT., 1916 No. 3

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Figures showing the fire loss of the United States and Canada for the first four months of the year are far from encouraging. The total losses in that time aggregate $97,555,420. So much effort has been made to teach the people to take precautions against fire that it is astonishing to find that the losses for the first four months of the year reach that immense sum. One would naturally expect them to show a decrease from the corresponding figures of last year; but such is not the case. The losses in the United States and Canada for the first four months of 1915 were $70,108,600, while for the first four months of 1914 they were $88,162,456. The 1915 record showed a considerable improvement over 1914, but the improvement was not kept up.

INFLAMMABLE BUILDING MATERIAL SHOULD BE BARRED

Carelessness is perhaps the main cause for this heavy fire loss, but it is certain that much of it was due to the flimsy construction of so many buildings. There are few cities in the United States whose building regulations could not properly be revised. The employment of inflammable material in building construction should be more strictly regulated by law. This is especially true of buildings of large size in the business sections of cities. It is true that some of the factories and many of our warehouses are veritable firetraps, not only in the former case endangering adjoining property but human lives. It is only when a big fire ends in catastrophe that we awake to a realization of that fact, and then we proceed to forget it.

In all the important cities of the United States during the past few years large sums have been spent for improving the apparatus of the fire department, yet we find that the fire loss in this country and Canada for the first four months of the year is actually $26,000,000 greater than that for the corresponding period of

last year. This is simply disgraceful. If as much money was expended in actual fireproof construction as on new fire apparatus the appalling fire losses would be reduced to a minimum.

THE EXPRESSION OF INDIVIDUALITY

A man does not build to himself alone. A house is not merely a possession; it is a contribution to many lives. While the exterior necessarily should conform to its environment, the interior, because it is the expression of the individual, is far more important. The inside of the house should express without reserve the individuality of the owner, his interpretation of life and love.

Discourse to no purpose and to no end might be indulged in as to the kind of furnishings, the color scheme of walls and hangings, floor coverings and the like for any home, speaking in the abstract. It matters not that a particular style or period of furniture or decoration, which might be selected, be perfectly good in itself, or that it be consistently followed. Unless they possess soul and reflect the nature and spirit of the occupants, the result will be far from satisfying. The spirit of the ensemble, to fulfill its very definite purpose, must carry and express in its atmosphere and in its being the essential elements of charm, comfort, graciousness and hospitality.

Although intelligent use of materials is necessary, underlying mere knowledge of detail there must be a comprehensive vision of the whole. The temptation is often irresistible when it comes to making use of some long-cherished possession, because of its individual beauty or for reasons of sentiment or attachment. Many a tall clock, innumerable pairs of old vases, and pieces of "antique" furniture have been intruded in otherwise perfectly good and agreeable schemes of furnishings. Completely out of character and out of keeping, they clash with the general plan and sound a discordant note. These heirlooms and relics had better be discarded altogether unless by some remarkable chance they fit in perfectly and aid in the creation of an atmosphere that is so enveloping and pleasurable that no feeling of obtrusiveness is apparent.

Rooms should open into each other as one mood melts into another; each one expressing individuality but possessing the essential elements of the general effect to an extent that there is no break in continuity.

Harmony of color may be said to be the real secret of atmosphere in the home of exquisite grace and comfort. In a room where pictures serve to provide the crowning note of glory nothing in the background should be permitted to intrude or detract from their loveliness of color and composition; every detail of furnishing should be subservient and lead toward the pictures' most perfect expression. The drawing-room walls are hung with materials of soft colors and the room is carefully furnished with gracefully designed furniture. It is skillfully lighted so as to afford an agreeable setting for the real ornaments—the people—and accentuate the lovely lines in costumes, jewels and faces, while mirrors, affording charming vistas and perspectives, hold and repeat the colorful scenes.

The dining-room, most severe in treatment, is intended to give charm to the single occasion. Quiet in its appointments, simple in gracefulness of design, the note of freshness and color is furnished by the flowers on the table, the genial faces around it, and the soft, subdued lighting.

When a particular object is designed as the controlling motif in any room, its charm and spirit should be distributed throughout the entire room, either in form or color, or both, until it has completely melted into the scheme of the aggregate. Every other detail of color

and furnishings should lead up to and enhance its peculiar beauty and distinction. The room should be the setting—the object, the jewel itself.

High Tax Will End Billboard Evil

France has found a way to abolish the unsightly billboards which disfigure the streets of cities and the landscape of the country. She proposes to tax them out of existence.

Finance Minister Klotz has introduced a bill in the Chamber of Deputies which imposes an annual tax of $10 per square yard upon billboards having less than six square yards, $20 per yard for those up to ten square yards, $40 up to twenty square yards, and $80 per square yard for all billboards containing more than twenty square yards. The tax will be doubled if two advertisements are on the same board, tripled for three, and quadrupled for more.

The bill also proposes to hold the land upon which the billboard is built responsible for non-payment of the tax. Another clause makes the owners of the land pay an additional tax based on the sum received from the advertising.

The courage of the French government in taxing the billboard nuisance might be emulated with gratifying results in the United States.—Exchange.

Fireproof Warehouse

The Sperry Flour Company will start work at once on a new concrete warehouse to replace its Vallejo plant, recently destroyed by fire. The company will probably spend $150,000 on a new structure.

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For Three Years—Edwin H. Brown, Minneapolis; B. J. Lubschez, Kansas City, Mo.; Horace Wells Sellers, Philadelphia.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

C. W. Dickey Returns

C. W. Dickey, the Oakland architect, has returned from Honolulu, and states that he has been commissioned to prepare plans for the following buildings:

A one-story reinforced concrete high school building on the island of Maui, costing $30,000.

A two-story frame and plaster residence with Cordova tile roof for H. A. Baldwin at Kaluanui, Island of Maui, costing $40,000.

A one-story frame and plaster residence for Dr. W. K. Baldwin on the beach near Kalului, Island of Maui, costing $12,000.

A two-story frame residence for A. H. Rice at Honolulu, costing $10,000.

Remodeling the Bishop Memorial Chapel, a stone building at Honolulu, costing $10,000.

The work will be turned out jointly with J. J. Donovan, Messrs. Dickey & Donovan having formed a co-partnership with offices in the Perry building, Oakland.

Spanish Church

Albert Farr, Foxcroft building, San Francisco, is preparing working drawings for a unique Spanish Mission design church to be built in the Piedmont foothills for the Piedmont Interdenominational Church. The estimated cost is $40,000. The edifice will cover ground area 125x100 feet. Construction will be frame, with cement plaster or Kellastone exterior, clay tile and composition roof. The building will contain a social hall, Sunday school room, kindergarten, kitchen and pastor's study, in addition to a large auditorium. There will be stained glass windows, an organ and a heating plant.

Stockton Store and Hotel Building

Messrs. Sala & Mayo, Commercial and Savings building, Stockton, have prepared plans for a three-story brick building to be erected on South El Dorado street, Stockton, for the Sanguinetti Estate. There will be stores on the ground floor and rooms for hotel purposes on the second and third floors. A steam heating plant will be installed.

Big Casino for Los Angeles

Alec E. Curlett, son of the late Wm. Curlett of San Francisco, who is now practicing architecture in Los Angeles, with offices in the Merchants' National Bank building, that city, has been commissioned to prepare plans for a large theater to be built at Broadway and Twelfth streets, Los Angeles. It will have a seating capacity of 12,000, in addition to forty boxes. The owner is Rudolph Aronson, who built the Casino Theater in New York, and was its manager for sixteen years. Associated with Mr. Curlett will be Francis Kimball, architect of the New York Casino. A Japanese tea garden, European spa, studios for artists and a roof garden will be features of the building.

Architectural Student Work

The San Francisco Architectural Club is the western headquarters of the Society of Beaux Arts Architects, by whom the programmes and prizes for the various competitions are arranged.

Through the kindness of Messrs. John Reid, Jr., and John Bauer, every student receives personal criticism of his work as the problem progresses.

Active Atelier work will start about September 26th. A calendar showing the dates for all problems will be posted in the club rooms shortly.

San Francisco Architectural Club

A class in structural engineering under the instruction of R. S. Chew, C. E., who has conducted very successful classes at the San Francisco Architectural Club during the past two years, is again being organized. Owing to requests from a number of members who wish to take up this work, it is proposed to form a new class and start from the beginning.

The Naming of California

A correspondent furnishes the following, which is interesting at least: The word California is derived from the two Spanish words Caliente, meaning "hot," and Fornalia, meaning "furnace." Joining the first four letters of Caliente with the first four and last two letters of Fornalia we have the word California.

Sudden Death of William Saving

While working at his desk in the offices of Maurice C. Couchot, C. E., William Saving, an Oakland architect, fell to the floor dead, August 31, from heart failure. Saving was thirty-six years of age and resided with his mother at 768 Fifty-fourth street, Oakland. According to his employers, he had been working for them but a few days and had complained of serious headaches.

Saving was a graduate of Columbia University and for nine years was employed in the office of Palmer, Hornbostel & Jones, New York City. He came to the Coast to work in the office of J. J. Donovan during the construction of the new Oakland City Hall. Saving was also employed at different periods by W. H. Weeks, George W. Kelham and a number of other architects.

Interesting Engineering Feat

The removal of the Ohio building intact from the Exposition grounds to a point twenty-three miles down the San Francisco bay was successfully accomplished the latter part of August. The building, which weighed more than 1,000 tons, was moved from its site to the water front on rollers. It was then mounted on barges and towed to its destination at San Carlos, where it is to be converted into a country club house.

Considering the length of the voyage and the proportions of the building, the undertaking was regarded as one involving unusual engineering features. The building is 131.5 feet long, 80 feet wide and 43 feet high.

New Hotel for Old

What is reported to be the oldest hotel in the San Joaquin Valley, the Visalia House at Visalia, Cal., is to be torn down at once to make room for the proposed $125,000 new hostelry. The old hotel is a brick structure built a few years after the gold rush of '49, and it has claimed as guests some of the country's great men. President Grant, Mark Twain, Bret Harte and dozens of famous men who were in California in the early days had written their names on the register of the hostelry. Ernest J. Kump is architect of the new hotel.

Marysville School

Miss Julia Morgan, Merchants' Exchange building, San Francisco, has completed plans for a one-story frame and plaster school building to be erected in Marysville. The roof in all probability will be terra cotta tile. A hot air heating system will be installed. An estimated cost of $20,000 is placed on the work.

Work in Charles Peter Weeks' Office

Charles Peter Weeks of San Francisco is preparing plans for additions to the Alameda County Infirmary and a new ward building for patients suffering from contagious diseases. The improvements will cost $20,000.

Mr. Weeks has completed plans and has taken bids for a one-story country house to be erected near Napa for Mirven Hollinger, chief chemist for the Standard Portland Cement Company. The house will be completely equipped with all the latest electrical devices for housekeeping, including electric stoves, hot water heater and lighting.

Elaborate Theater Lighting

There are 4,000 electric lights in the sign on the roof and in the front of the new Reliance Theater in Oakland. The house is equipped with an emergency lighting system, so it will be utterly impossible for the theater to be without lights. The scheme of interior lighting is with semi-direct fixtures equipped with the new Edison nitrogen lamps. The front of the structure and the thoroughfare are lighted with a heavy bank of flood lights installed on the opposite corner.

W. H. Crim, Jr., Busy

Wm. H. Crim, Jr., is one of the busiest architects in San Francisco. He has more than $250,000 worth of work in his office or under way, including a large fireproof factory on Brannan street for the Pacific Envelope Company, a two-story Class C factory for M. A. McLaughlin at Harrison and Bryant streets, and which already has been leased to A. G. Spaulding Bros., a store building for Mr. White and some residence work.

A Polk Prophecy

A neat prophecy was that uttered by Willis Polk at the Commercial Club luncheon to Hughes. Polk was introduced to the Governor as "the architect who rebuilt San Francisco." Instantly he transformed this compliment into a far greater one for the distinguished guest. "And you, Governor," he said, "are the architect who is going to rebuild the nation."

Tulare County Jail

Ernest J. Kump, Rowell building, Fresno, has been commissioned to prepare plans for the new county jail at Visalia at a cost of $40,000. Construction will be similar to the present building, with granite and brick exterior, concrete walls, wood floors and thirty steel cells. Building will be two stories and basement.

Preliminary Plans Made

Engineer Henningsen, Security Bank Building, Oakland, has made preliminary plans for a large water front enterprise to be located in the vicinity of Moore & Scott's plant on Oakland's waterfront. There will be a wharf and a one-story mill construction dock building. There will also be a six-story reinforced concrete warehouse for storage and manufacturing purposes. The investment will represent an expenditure of several hundred thousand dollars.

Two New Catholic Churches

Messrs. Shea & Lofquist of San Francisco are completing the working drawings for St. Peter's and St. Paul's Church on Filbert Street. Edifice is being designed in the Italian style and will cost close to $150,000 when completed. Construction will be steel frame, brick walls and brick and terra cotta exterior.

The same architects are preparing plans for a Mission type church for La Merced de Dios parish at Merced, to cost $20,000.

Designing Santa Clara Convent

The architectural firm of Shipley, Routan & Coolidge of Boston are preparing the drawings for the new Catholic Convent to be erected at Santa Clara for the Carmelite Sisters. The building is to be of brick construction, three stories high, and will cost approximately $150,000. Some preliminary estimates have been taken.

Six-Story Building

Edward G. Bolles of San Francisco is preparing plans for a six-story reinforced concrete store and loft building to be erected on the northeast corner of Mission and Ecker streets, San Francisco, for C. W. Burgess. Building will cost in the neighborhood of $100,000.

Alterations to Flats

Messrs. Heiman & Schwartz, Nevada Bank building, San Francisco, are preparing plans for alterations and additions to a flat building on McAllister street, east of Devisadero, San Francisco. The present building will be converted into four four-room apartments, with English basement.

The same architects are preparing sketches and will shortly make working drawings for a two-story frame and plaster residence in Forest Hill, San Francisco, to cost $5,000.

Practicing Architecture

Architect George M. Lindsey, for a number of years employed in the architectural and construction department of the Los Angeles City Board of Education, has resigned to take up the general practice of architecture.

San Francisco Apartment House

Plans have been prepared by Houghton Sawyer, Shreve building, San Francisco, for a three-story apartment house to be erected on California street, near Gough, for Dr. Edith H. Williams. The building will have a number of unique features, including a roof garden, gymnasium and swimming tank. The estimated cost is $45,000.

More Garages for Van Ness Avenue

Clarence A. Tantau has prepared plans for an automobile sales building and garage, which will be erected on Van Ness avenue near Post street, and William H. Weeks also has plans under way for a two-story reinforced concrete garage on the same thoroughfare. Both buildings will cost in the neighborhood of $35,000 each.

Making Preliminary Sketches

Architects Schirmer-Bugbee, Dalziel building, Oakland, are preparing preliminary sketches for a large, impressive Catholic church to be erected in Livermore, Cal. An estimated cost of $50,000 is placed on the work. Sketches are also being prepared by the same architects for a $15,000 two-story frame residence to be erected in Oakland.

Modesto Bank to Be Enlarged

The First National Bank building, Modesto, plans to spend $35,000 for improvements and remodeling the structure. Preliminary plans have been made by San Francisco architects. The changes will include an entire new front and an addition of possibly one or more stories. The interior will also be altered and new fixtures installed.

Contracts on Kohn Residence

Messrs. Cunningham & Politeo, First National Bank building, San Francisco, have awarded contracts for the construction of a two-story and basement frame and plaster residence on the north side of Tenth avenue, east of Clement street, San Francisco, for Philip Kohn, Kohl building, San Francisco. Total cost, $15,000.

Oakland Creamery Building

Plans have been drawn by Architect Claude B. Barton, First Savings Bank building, Oakland, for a $15,000 two-story and basement Class C creamery building at Fourteenth and Willow streets, Oakland, for the Oakland Cream Depot.

Plans for Residence

Sidney B. Newsom, Nevada Bank building, San Francisco, has prepared plans for an attractive two-story frame and plaster residence to be built on Eleventh avenue, San Francisco, for Attorney Frank L. Fenton.

What Los Angeles Architects Are Doing

Harrison Albright is completing the plans for a group of reinforced concrete buildings, including a bank, theater and stores and apartments, for the Spreckels Bros. Securities Company at Coronado.

E. J. Borgmeyer has completed plans for a moving picture theater at South Pasadena for Edward N. Jarecki. It will cost about $25,000.

W. J. Dodd and William Richards are finishing the drawings for a large two-story store and apartment building to be built in Hollywood for A. C. Hollins.

C. M. Winslow, who recently opened an office in the Van Nuys building, has plans on the board for a large fireproof residence to be built at Santa Barbara for William H. Bliss. It will be Spanish Renaissance style of architecture and will cost $150,000.

R. D. Farquhar is working on sketches for a large residence to be built in the San Fernando Valley for W. F. Holt. The house will cost about $50,000.

Arthur R. Kelly is finishing the plans for a three-story reinforced concrete hospital building, to cost approximately $80,000, which will be built at Clarkdale, Ariz., for the United Verde Mining Company.

Messrs. Train & Williams have plans on the boards for a four-story reinforced concrete building to be erected for the Los Angeles Creamery at its plant at Eleventh street and Towne avenue.

Robert H. Orr is engaged in planning a group of buildings for the Claremont School for Boys at North Claremont.

Messrs. Marsh & Howard are completing plans for the new high school building to be erected at Kingman, Ariz. The buildings will be classic in design.

Architects' Chapter Resumes Meetings

The Southern California Chapter of the American Institute of Architects resumed its regular meetings, following the summer vacation, Tuesday evening, September 12th. The meeting was held in the Merritt Jones Hotel at Ocean Park. A splendid program was arranged by the entertainment committee, of which Lyman Farwell was chairman. An interesting address was made by Robert B. Lammens, a concrete engineer, who spoke on waterproofing for concrete work. The subject is one in which architects generally are very deeply interested.

Two-Story Richmond Building

Plans are being prepared by James Narbett, 704 Macdonald avenue, Richmond, for the construction of a two-story business block in that city for Miss F. Whiting of San Francisco. Building will contain stores and rooms.

Two Arched Gravity Dams

The city of San Diego will shortly submit to the voters a proposition to vote a bond issue for constructing at least one of two arched gravity dams. One will replace the Lower Otay dam which failed on January 27th during the period of great flood, and the other at Barrett. The cost of these two dams, which will increase the city's water supply by approximately 10,000,000 gallons per day, is estimated at $1,372,600. Plans for both of the structures have been prepared by Consulting Engineer M. M. O'Shaughnessy of San Francisco.

A Roof Garden Novelty

A New York hotel, the Bossert, has fitted its roof garden to resemble the deck of a palatial yacht. Deck chairs, cabin accommodations, ship's bell and a huge smoke stack add to the illusion. The waiters are attired as stewards and sailors. The effect is said to be highly attractive.

Sacramento Carnegie Library

Loring P. Rixford, Sharon building, San Francisco, has completed working drawings for the new $100,000 Carnegie library for Sacramento, and the plans are now in the hands of the Sacramento Library Trustees. Building is to be of steel, stone, pressed brick and terra cotta and will cost $100,000.

Addition to Fresno High School

Plans have been prepared by Messrs. Coates & Traver, Rowell building, Fresno, for the construction of an annex to the Fresno high school. The plans provide for seventeen class rooms. The estimated cost is $55,000.

New Fresno Garage

Architect P. F. Felchin has prepared the plans for a one-story brick garage, 50x150 feet, to be erected on J, near the corner of Merced street, Fresno, for Messrs. Peacock & Robins, agents for the Hupmobile and Oakland cars.

Residence Contract

Messrs. Falch & Knoll, Hearst building, San Francisco, have let a contract for the construction of a one-story frame residence on Twenty-fifth avenue, San Francisco, for S. W. Richardson.

Making Hotel Plans

Architect P. Righetti is preparing plans for a large hotel for Santa Barbara, also for alterations to the Simon-Jacobs building at Merced.

Personal

Mr. Cass Gilbert received the honorary degree of Doctor of Laws at the last commencement exercises of the University of Michigan.

Electrical Department

Economical House Wiring

By H. CONGER BOWERS.*

IT is an unfortunate fact that many people consider the lighting of their homes of slight importance. The switching arrangement is given little attention and is far from being either convenient or economical. They make no provision for any of the convenient heating appliances now on the market, and give absolutely no thought to the type of electrical fixtures they propose to use.

The electrical work is given scant consideration, except to see how cheaply it may be done. They will let the contract to the lowest bidder, regardless of standing or knowledge and, when too late, wake up to the fact that they have an unsatisfactory installation and are barred from the use of many conveniences, which, perhaps, for the same expenditure, they might have had.

We have in mind a large residence which we inspected just a few days ago. The house is perfectly planned, well finished and commands a magnificent view; each room shows that every detail was given considerable thought; the kitchen appointments are all that could be desired—the plumbing fixtures are perfect. The electrical work was let to a friend of the general contractor and merely called for the installation of so many outlets, so many switches, so many lights and so many telephones.

The work is, of course, unsatisfactory. After careful inspection, I could but tell the owner that he had gotten just what he ordered, that the work was in accordance with the contract. I also found that for the same money he could have had what he wanted. I did not tell him that the "worst was yet to come"—that owing to the manner of wiring he could not have electrical fixtures in keeping with the rest of the house.

I have before me the data on a six-room cottage in the city of Los Angeles. The house in question was wired some time ago. A few days ago he bought and paid for some $65 worth of electrical fixtures. This morning he rushed into the office complaining that it was impossible to hang the fixtures. Upon investigation I found the house wired for about half the load required. And so it goes.

In laying out the electrical work, in a residence particularly, there are many points to be considered which do not add one cent to the cost, but do add immeasurably to the convenience.

Beginning with the lighting, it is essential that the lighting scheme be laid out and that the type of fixtures be determined before your house is wired in order that you may get your ceiling outlets in the right location and your bracket and receptacle outlets at the proper height and—this is one of the most important items in the wiring and the one given the least attention until time to hang the fixtures—every outlet equipped with the proper outlet box.

We could fill a page telling of the trouble and expense caused by neglecting this one item. We inspected a reinforced concrete apartment building less than a year ago, on which the electrical contract was approximately $1,500. The specification was silent regarding outlet boxes; the owner did not know. Upon completion it was found impossible to hang the fixture ordered and we are informed that it cost nearly $250 to make the necessary alterations. Had a little forethought been given, the proper boxes could have been installed for about $1.50, as the difference in cost to the con-

*Electrical Engineer for Southern California Electrical Contractors and Dealers' Association.

tractor between the box installed and the box required was one cent, there being some 150 boxes affected. This is an extreme case, but trouble with outlet boxes is the rule rather than the exception and can be avoided.

Next comes the switches and switching arrangement. This is where the average owner pursues a "penny wise and pound foolish" policy.

The most economical appliance, and one of the most convenient, is a three-way switch.

When a price of $3, $4, $5 or more is quoted for installing such a switch one is apt to say, "We cannot afford it," forgetting that they pay for a switch but once and for electric current every month.

The more convenient the switch the less current used.

Electrolier switches on the heavy fixtures, especially the dining room, add very little to the cost of the wiring and save a great deal of current.

Assume a six-light fixture connected on a two-circuit electrolier, the first contact lighting two lamps—the next lighting the entire number; or assume a four-light fixture connected one and three—it requires no argument to show the saving. The one or two lamps give ample light for the housewife or the maid to set the table or clear away the dishes.

The above are merely illustrations. Electrolier switches may be had in two or three circuit and connected to suit the requirements.

Under the head of economical, money saving appliances comes the electrical laundry equipment. The iron has become a household necessity, and requires no comment, but many people have yet to learn the actual advantage of the washing machine and mangle.

While the first cost of a washing machine may seem high, nevertheless they are a good investment, and may easily be paid for in two years out of the laundry bills; possibly in one year if there are babies in the house. The current consumption of a washing machine or mangle is very small, practically negligible, but their greatest recommendation is as labor saving devices.

The necessary receptacle outlets should be provided in the laundry for these appliances and especially for the iron, as the common practice of operating an iron from a fixture socket is unsafe. The proper receptacle outlet should also be provided in the dining room for a percolator, toaster, chafing dish, etc. This adds very little to the cost of the wiring and is very desirable.

Under the head of "conveniences" come the various heating devices.

Technically all the above are classed as heating devices, but for our purpose we will refer only to air heaters. There are a number of excellent heaters on the market and their use is becoming more and more general.

Proper provision must be made in the wiring for appliances of this class, as otherwise satisfactory results cannot be obtained.

Another matter of importance and one often overlooked is the location of cut-outs, the location of the meter and the manner in which the service wires enter. This is a difficult question to discuss in general and we suggest that a competent electrician be consulted.

Finally two items apparently so simple that in the average specification they are given but a line, but which really cause more grief and expense than all the rest, are the bells and private telephones. A bell system improperly installed, cheap wire nailed to the joist, insufficient battery and no-account bells can make a man forget his religion.

A telephone system improperly installed with cheap instruments is a continued source of annoyance and expense and worse than none. This is one part of the electrical work where you must pay for first-class equipment if you want satisfactory service. A cheap telephone will not work satisfactorily and cannot be made to do so. In laying out your telephone system there are several things to be taken into consideration. The first two absolute essentials are a first-class instrument adapted to the service, and high-grade wire properly installed.

As to the instruments there are several good telephones manufactured, which, if properly equipped, will give good service. The equipment depends on the system and service required.

As to the system, there is the common talking, code ringing; common talking, selective ringing; selective talking, selective ringing non-interfering; and the central exchange or master station. The type of instrument, the equipment and the system must, of course, be selected to meet the requirements. Here again we would suggest that a competent electrician be consulted.

As to the wiring, experience has taught practical telephone men that there is only one way to wire for telephones, and that is to use braided and twisted rubber-covered wire supported by bridle rings or a standard telephone cable. Wiring must be kept free from dampness, and clear of other metallic conductors. Dampness causes cross talk and metallic conductors cause grounds and short circuits.

This method of wiring will give satisfaction and on large installations is as cheap, if not the cheapest.

San Franciscan Winner of Electrical Week Poster

By H. W. ALEXANDER.

IMAGINE nearly 800 posters, all in colors, all by individual artists, and you have an idea of the task before the judges who recently selected the prize winners in the America's Electrical Week poster competition conducted by the Society for Electrical Development.

The competition closed June 1st. Over 800 posters were received, representing over $100,000 worth of designs. The winner was Harold Von Schmidt, employed in San Francisco, and whose home is in Alameda.

The number of posters submitted is more than four times greater than the returns of any previous poster competition in the United States. Also, in the character of posters submitted, and the standing of the artists, the contest far exceeded all previous contests in America and was ahead of any of the great competitions in recent years in Europe.

As a publicity venture it has already exceeded expectations. In each of the cities where the exhibit has been shown thousands of dollars' worth of space in the reading columns of newspapers have proclaimed the importance of the exhibit and its purpose. In the advertising magazines and in the trade press dozens of pages have told of the record made by the contest. Hundreds of newspapers directed attention to America's Electrical Week and the contest during the two months it was in progress. Considerable more publicity will be given during the months to follow. Thousands of persons saw the posters at the various exhibitions.

It is fair to assume that the results of this two months' study of electricity by artists who are daily making designs for all kinds of industries will be reflected in the posters of the future. The electrical touch is sure to be in the poster of tomorrow.

The big idea was to get an official poster for the week which would most appropriately depict the influences of electricity—and at the same time be a fitting design for this great national undertaking. The design had to be striking to get attention, and it had to be a design which could be faithfully reproduced in everything, from a poster stamp to a bill poster.

Since America's Electrical Week appeals alike to rich and poor, men and women, merchant and customer, artist and engineer, everybody was asked to suggest a fitting design to drive home into every hamlet and city in the land the message "Do It Electrically."

The judges were unanimous in their choice—which is shown here. In colors it of course is many times more effective.

The judges are recognized as representative commercial art critics:

John Quincy Adams, secretary of the Municipal Art Commission;

Dr. James P. Haney, art director of the New York High Schools;

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Herbert S. Houston, president of the Associated Advertising Clubs of the World;

Arthur F. Wiener, president of the International Art Service;

P. L. Thomson, advertising manager of the Western Electric Company.

Henry L. Doherty, president of the Society for Electrical Development.

The poster might well be entitled "Aladdin; Symbol of Service."

Of all the Arabian Nights Tales, the story of Aladdin is perhaps the most fascinating.

The all-powerful slave, who could be summoned by the mere rubbing of the mysterious lamp; the treasures thus at the command of the lamp's owner; these make a narrative which will live as long as the world lives.

Yet the modern Aladdin, pictured in this poster, performs wonders that make the adventures of our Arabian Nights hero fade into insignificance.

Gone is the ancient lamp. Now it is the gentle touch of a button and forthwith comes the Genie, Electricity. He bears, not precious stones, but things far fore precious—light, heat, power. It is the power that makes the world go 'round, the heat that forever drives out cold, the light that turns night into day.

This design will be used throughout the campaign, millions of poster stamps, window and car cards, lithographs, bill posters, in newspapers, magazines, etc. It will be reproduced at least 200,000,000 times.

After many deliberations the judges eliminated all posters not entitled to be considered for the public's choice prize. Some 125 posters survived this test. The judges then determined the winners of all of the prizes except the public choice prize.

The prize winners were then voted on, with the following result:

No. 717. The first prize of $1000—Harold Von Schmidt, San Francisco.

No. 174. The second prize of $500—John A. Bazant, Bronx, N. Y.

No. 452. The Art Students prize of $200—Edward Staloff, Jersey City, N. J.

No. 392. The first school prize of $100—Harold H. Kolb, Sommerville, Mass.

No. 80. The second school prize of $50—William E. McKee, Jr., Hollywood, Cal.

No. 64. The third school prize of $25—Armand Moreda, Brooklyn, N. Y.

No. 576. The fourth school prize of $15—Ruth M. Jameson, Buffalo, N. Y.

No. 720. The fifth school prize of $10—Edna E. Crowley, Chicago, Ill.

Cooking by Wire

From Southern California comes the news that "cooking by wire" is gaining in popularity. Two transmission line short circuits were recently caused by birds dropping snakes across the line. Needless to say the snakes were beautifully roasted.

Review of Recent Books

A SHORT HISTORY OF ART. By Julia B. de Forest. Edited and revised by Charles H. Caffin. Published by Dodd, Mead & Company, New York. 289 illustrations. Price $3.00.

Preserving the arrangement of Julia B. de Forest's former standard History of Art, Charles H. Caffin has brought it down to date with a wealth of new illustrations and a fuller knowledge of art history than was available when this work first appeared. He has freshened the original considerably and tied in the modern movements, particularly in painting, in a manner which will give all who care to read and look over it a broad view. One is impressed with the reproductions of paintings selected from each period. They show not only good judgment, but a general understanding of the "living fire," whether expressed in the refined and exquisite beauty of Greek sculpture, the massive dignity of Gothic architecture or the exhilaration of modern French painting.

This book is more than a dry history. It is a well presented and a well illustrated summary of the known art of the world.

NIGHTS—ROME, VENICE IN THE AESTHETIC EIGHTIES; LONDON, PARIS IN THE FIGHTING NINETIES. By Elizabeth Robins Pennell. Lippincott. Price $3.00.

It is a characteristic of memoirs that the more truly they record the more subtlely they radiate the untoward whimsicality of life. Such are these latest memoirs of Mrs. Pennell's. They are a tale of the artists who reached the height of their powers in the eighties and nineties, and if they are alive, pulsating, glorious with a portrayal of ideals striven for and achieved, they are no less poignant with admissions of hard labors that brought no rewards, of dreams that were persistently unrealizable, of faltering pilgrimages that led to no Mecca.

In Rome and Venice, where, as in California, the natives are so proud of climate that they are impervious to the need of stoves and steam heat, the meeting ground for the discussions, for the sake of warmth, was usually a cafe. A man might hesitate to tell another man that his work was hopeless, if he were the guest of his best friend. But in a cafe, where the proprietor cared not what opinions were expressed so long as the bill was paid, there was no cause for diffidence.

The care-free convenience of the cafe being unknown in London, the meetings there took the form of "Thursday

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Nights" in the Buckingham street house of the Pennells. And here it was, to the accompaniment of Henley's roar and Whistler's laugh and Phil May's "golden silence" that the energetic campaigns were planned for battering anew at that well-nigh unyielding Victorian portal. The scale on which these "Thursday Nights" were carried out was much greater than that of the Nights in Italy. To them came Henry Harland, Aubrey Beardsley, Louis and "Bob" Stevenson, numerous and staunch disciples of Henley—called by Mrs. Pennell Henley's Young Men—Kenneth Grahame, Walter Crane, George Moore, John Lane, Max Beerbohm, Arthur Morrison and unnumbered others, great and less great. On rare occasions there even appeared G. B. S.

Mrs. Pennell visualizes the spirit of the fighting nineties in Paris by the following:

"I feel how long ago the nineties were when I hear young people in Paris today talk of the two Salons as the Artistes-Francais and the Beaux-Arts. In the nineties we who watched the parting of the ways knew them only as the Old Salon and the New Salon because that is what we saw in them and what they really were. We could not write about either without a reminder of the age of the one and the youth of the other, the Old Salon remaining the home of the tradition that has become hide-bound convention, and the New Salon offering headquarters to the tradition that is being 'carried on,' as we were forever pointing out, borrowing the phrase from Whistler."

A review of these Nights would not be complete without mention of the place, which, according to Mrs. Pennell, the architects occupied in these gatherings. The architects, it seems, were "with them but not of them"; for they were prosperous. They were dandies as compared with the modestly attired pursuants of the less utilitarian branches of art. In that group "the man who sold was looked down on, rather." In London at the Thursday Nights the architects were conspicuous for their "fashion-plate correctness." In Paris on one occasion the most correctly garbed member of the fraternity created a veritable sensation. The place was a cabman's eating house, at which the group were lunching to atone for previous extravagances. The architect, being a "good fellow," though prosperous, came along —in top hat and frock coat, the tails of the coat being dragged in the gutter as he sat at the cabman's table. "He had the grace to be ashamed of himself," writes Mrs. Pennell, "apologizing for his clothes and assuring us that he could not help himself, which was his reason, I fancy, for accepting at an early age the professorial chair where the decorum of his hat and coat was in need of no apology."

THE LIFE OF THE SPIDER. By J. Henri Fabre. Dodd, Mead & Company, New York. $1.50.

Maeterlinck, in a brief preface to this interesting book, says of J. Henri Fabre that he is the insect's Homer. Again he is spoken of as possessing "the patience, the precision, the scientific minuteness, the protean and practical ingenuity, the energy of a Darwin." Whimsically he may be referred to as the insect's Ernest Thompson Seton, for droll humor is another of his assets.

Yet with all this likening to others, one notes another quality—the charming simplicity, akin to child-like wonder, with which he writes of a world we usually shrink from or ignore.

In writing of the spider he displays the same ingenuous spirit as in writing of less sinister forms of life. No matter what astonishing habit or cruelty he details for the reader, whether it be the architectural skill with which one species fashions its burrow or the geometrical precision with which another fashions its web; whether it be the spider's fierce cunning in the hunt, her marvelous fecundity, her unwearying patience, the mysterious manner in which the young grow to maturity with apparently no nourishment, or the tragic nuptials so often ending in a cannibal orgy, he does so always with the fresh wonder of a pioneer exploring the depths of a virgin land.

PERSPECTIVE. An elementary text book by Ben J. Lubschez, A. I. A. 2nd ed.; enlarged; 111 pages; 36 illustrations and plates. Van Nostrand Co., New York. $1.50 net.

This book should be of use to draughtsmen because it presents very simply and clearly what they need to know about perspective. It is valuable principally to the struggling student who is endeavoring to better himself by home study and who can get but little assistance, if any, either personal or from books, the latter usually being too difficult for him to read. It gives him a beginning, so that he may be able to solve the ordinary problems of every-day practice, and, as stated in the introduction, qualify himself for the reading and study of more profound books on the subject. The general discussions may also be read with profit by laymen who wish merely a general knowledge of the science. The author states that the text is the result of many years' experience in making perspective drawings in an architect's office and in teaching the science to beginners.

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The Contractor

HIS TROUBLES AND SOME OTHER THINGS

Low Bidders on Contract Work

By CHARLES EVAN FOWLER.*

THE speaker has been pleased to note, during his travels about the State, the splendid character of the improvements that are being carried out by the various county governments, under the direction of the county engineers, and to note the improved character of the work that is being done under the present engineering system of the counties.

The county commissioner form of government is the oldest form of commission government, as now being adopted by so many cities, and it must be due to your success in county government as a general rule that such a method has grown in favor. The fact that most boards constantly consult their engineer on all of the important problems in the county is a very pleasing indication as to the value of being placed upon engineering services by those in positions of trust and authority.

The fact that many counties are now authorizing their engineers to call in consulting engineers for special work represents a broad-minded policy, as the county engineer cannot find the time to study special problems that come up in a busy season, nor can they find the finances to employ experts regularly. That the attempt to gloss over such work by inexperienced help so often results in loss or at least in getting poor structures is now generally recognized.

The practice of accepting free plans from contracting firms is now pretty well corrected, as both the commissioners and the engineer realize that they cannot get something for nothing, and to accept a poor plan in this way only reflects on their intelligence and their integrity.

The immense amount of capital invested in contracting is at the present time unproductive, as nearly all contracts are being let at cost or at a loss, and before we can have really good times we must make this capital productive.

The acceptance of a bid that is too low means an indirect financial loss to your county; it means trouble for the engineer in his endeavor to get good work; it means trouble for the commissioners in enforcing the contract, and probably a lawsuit at considerable loss and expense to the county.

The low bidder, as a rule, has not the necessary experience, plant or resources to properly carry out a contract and some remedy must be found to have your work done by proper contractors, as you know only too well that poor results are bound to be the effect of having your work done by a beginner or one who lacks proper plant.

The first and quickest remedy for this condition would be for the county officials to make all the bond companies understand that no bonds would be approved from a company who made a practice of writing bonds for such bidders.

The final remedy must come from a change in the State laws, and might consist in a provision which automatically rejects the lowest bid and makes it mandatory upon the board of county commissioners to select from the next two bidders, the one having the greatest experience, the best plant and the greatest resources.

The most advisable, perhaps, would be to have the law changed so as to make it mandatory upon the commissioners to select from the three lowest bidders the one having the best experience, plant and resources.

The legitimate contractors at the present time and under present conditions are not making any, or at least reasonable, dividends on the enormous investment in this line of business, and they are justly entitled to be paid the cost of the work, their operating cost or general expense, which is usually about 6 per cent, and on all this a 10 per cent profit.

You can rest assured that, under such a proposed system, the ultimate cost of work would be less and that the quality would be of the best, and not such as is gotten now in too many cases, and which will prove in the end the wisdom of relegating the "low bidder" to oblivion.

*Consulting Engineer, Seattle. Extracts from address at joint meeting of county engineers and commissioners, North Yakima, Wash.

Sub-Contracting*

By CHARLES W. CARKEEK.

WE are all well aware that there are certain existing evils in the building trades of today that should be remedied, and it is my candid opinion that most of the deplorable conditions that now exist can be improved through the earnest and mutually helpful co-operation of the architects and the master builders, for they are, respectively, the author and the finisher of every building of any importance in our land today.

With a concerted effort, led by the architects and the master builders, we have every reason to believe that a large measure of good results will be obtained in the very near future.

An important movement in that direction—a movement now well under way—is intended to eliminate the wrongful, squeezing and grinding methods that many have employed in connection with sub-contracting.

As one remedy for this evil, we propose that we will not sublet the carpenter, the brick or the concrete work, but instead, will employ competent foremen for each of these branches, with the foremen under the direct charge of the general contractor. This rule in itself, properly enforced, should go a long way toward improving conditions in these leading branches of the building industry.

The success of this movement will not merely tend to eliminate the irresponsible and the incompetent contractors, but should have the consequent effect of greatly improving the class of workmanship, which, I am sure, is greatly desired by the architect as well as by every legitimate and conscientious master builder.

These branches of work, if you will remember, include the structural—the principal part of the building, that portion of the building that, in my judgment, should be more closely safeguarded against faulty construction methods than any other, for on the framing, on the structural part of the building, lies the greatest element of risk to the life and limb of the occupants and, I should add, to the capital invested in the building by the owner.

I believe that the better way to insure the public against this element of danger, to assure the owner the best returns from his investment, to reduce the care of and to increase the satisfaction of the architect—with the fullest realization of the architect's plans—is by entirely doing away with the sub-contracting sys-

*An address before the Seattle Convention of Architects and Builders.

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tem as it applies to the branches of the work under consideration.

One important result of the application of this remedy would be to throw the entire responsibility for the mechanical excellence of the work involved directly on the general contractor.

I am not prepared to say that the proposed remedy can be made immediately effective, but master builders now propose to put it to the test, to give it a fair trial and, meeting with the approval and with the co-operation of the architects, I feel assured that the result will be a vast improvement over the present practice of so often sub-letting these branches of the work of building construction.

It will doubtless be of interest to some of you to learn that the Seattle Structural Building Trades Alliance, that is composed of the journeymen carpenters, bricklayers, hoisting engineers and building laborers, is heartily in accord with the movement. In fact, they have placed themselves on record and have pledged their support to each other that they will refuse to work for any one who shall take a sub-contract involving labor in any of their trades.

You can readily see by the action of the Building Trades Alliance that its members are determined to take the same attitude as that assumed by the master builders in their effort to remedy the evils in the sub-contracting of labor.

It has always been my contention that where there is a recognized and reasonable standard of wages that the same should be maintained, for if we disregard that recognized wage standard we at once upset the established idea of the cost of labor and begin inevitably to engage in unfair and unjust competition, with the result of lowering or debasing the standards of workmanship.

This is a matter which, to my mind, should be given the fullest consideration, for unless we are prepared and do meet all wage earners on the same fair and equitable basis, it is useless to expect their co-operation as workmen in return.

A natural consequence of a failure to insure reasonable and equitable conditions among the wage earners in the building trades is that in the mechanical work of constructing the stable, useful and, especially, beautiful buildings designed by the members of the architectural profession, there will be such a slighting of the workmanship that the sensible and the finest purposes of the architects will never be realized.

I have touched on the wage earner, in addition to referring to the architectural requirements, so that you may clearly understand that the Master Builders' Association in formulating their general plan of action, are considering not merely themselves but all others engaged in or related to the building industry, including, especially, the owners of the buildings, and recognizing, in the broadest sense, our obligation to society in general.

Now, to my mind, when a sub-contractor is invited to submit a tender, in his particular line of work, to a general contractor and that tender is used in the final making of his estimate, the general contractor should accord the same consideration the sub-contractor as he himself expected from those to whom he has submitted a bid on the work as a whole.

It should be understood, however, that such sub-contractor's bid is to be used subject to the approval of the architect.

By adopting this method, or one along similar lines, the result would be that the most competent and responsible sub-contractors would be placed in the position where they belong; that is, at the front in their special lines.

They would soon realize that in order to maintain their position they would be obliged not only to earn the good will of the general contractor but the approval of the architect as well.

Another point that is worthy of consideration is a plan to destroy the evil temptation, the unmanly practice of what is today referred to as "peddling of sub-bids." This is really a clear case of "peddling without a license," and should always be condemned. A general contractor often being awarded a contract, to secure which he previously depended on the assistance of a sub-contractor, should feel morally bound to enter into a contract with that sub-contractor for the work on which the latter submitted his sub-bid. I might offer, merely as a suggestion, a method that may be worked

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out to guard against the "auctioneering" or peddling system.

The suggestion is something along this line:

That where a general contractor has invited sub-bids, prior to the filing of his general bid for the various sub-branches involved in the building, he, the general contractor, should acknowledge by mail the receipt of each sub-bid, at the same time advising each successful sub-contracting firm of his (the general contractor's) intention to use their bid, and that in event of being awarded the general contract he will expect the sub-contractor to enter into a contract at the price quoted in his estimate. I am not, however, offering this as a final solution, but simply to give expression to the thought as it has presented itself to me.

There is one thought in my mind that is underlying and intermingled with all others: It is that the plans for the relations of the master builder and the sub-contractor, as well as all others engaged actively in the building industry, must be so made that in their final application they shall result in an efficient, economic and harmonious whole. And this to the end that the useful and beautiful creations of the architectural mind shall be adequately realized through the trained mechanical ability of the master builder.

A Toast to the Contractor

He deserves a double toast—one for his burdens, the other for his mission and the larger meaning of his work.

He is the peg on which every one connected with a building enterprise wants to hang his troubles—and his delinquencies.

He is the wizard whose reading of plans and specifications must be free from error, even if they are not.

He is the wizard who must be able to foresee unforeseen circumstances, who must prevent unpreventable interference with his job.

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Big Irrigation Project

In a recent issue was printed an account of a proposed irrigation project for the Lindsay-Strathmore Irrigation District in Tulare county, subject to the voting of bonds for the purpose.

At the election held last month the property owners by a vote of 191 in favor to 15 against, decided to issue bonds to the amount of $1,000,000 for the purpose.

The decision of the voters favoring the bond issue opens the way for the development of hundreds of acres of the most fertile foothill orange land in the State. Water will come from the delta between the Kaweah and St. John's Rivers, north of Exeter, where test wells have proven there is an abundance only a few feet from the surface of the ground. It is the belief of the engineer and officers of the district that water can be had on the lands by 1917 irrigation season.

The directors of the district are: E. L. Daniells, Charles K. Towt, D. A. Eckert, John Burr and F. M. Pfrimmer. Officers are: E. L. Daniells, president; C. W. Wright, secretary; McKee Mhoon, treasurer; E. B. Gould, assessor and tax collector.

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One of the handsomest and most complete plumbing fixture catalogues we have ever seen has just been published by the J. L. Mott Iron Works, Fifth avenue and Seventeenth street, New York. It is a book of 138 pages, with attractive cover in soft gray and blue tones. The catalogue is illustrated with very fine halftone plates, showing the wide variety of fixtures manufactured by the Mott company. The following preface gives a good idea of the contents of the catalogue and the line of fixtures carried:

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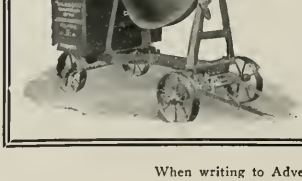

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Anticipating the possibility of a boom in business incident with the rebuilding of destroyed towns and cities in Europe, after the war closes, business men on both sides of the Atlantic are already taking steps to establish a foundation for the transaction of business between the United States and Europe.

The following letter has been received from an architect in Paris:

RENE GRUET
Architecte
La Mercredi de 2 a 5 h
77, Rue Reaumur

Paris, 12th July, 1916.

The Architect and Engineer, San Francisco.

Dear Sir: Your address was given me by the United States Consulate here, and I beg to ask you to kindly advise your country's manufacturers, by means of your paper, that:

I am establishing in Paris, with the help of some of the best builders of the place, an important firm for building materials, material and plant. I would be glad to be given the exclusive agency for France and Belgium of one or more articles having regard to building.

With my best anticipated thanks, I am, dear sir,

Yours faithfully,
RENE GRUET.

Hills Bros. Plan Addition

Hills Bros. Coffee Company, 175 Fremont street, San Francisco, have purchased the southeast corner of Howard and Fremont streets, upon which they intend to build a substantial addition to their present factory. It is believed that construction will be started this year and that a building at least five stories in height will be erected.

"Be-ver" Cork Tiling

A new material for floor covering is now being offered for the consideration of the architects of the Pacific Coast in the "Be-ver" colored cork tile.

This tiling, while enjoying a phenomenal sale in the East, has not been exploited to any extent in this section of the country, but from the many advantages it possesses we feel certain that it will come quickly to the front and be largely used in libraries, public buildings, hospitals, theaters, bathrooms and kitchens, and, in fact, wherever an artistic, quiet and durable flooring is desired.

The material is granulated cork and rubber substitute; the colors are permanent and do not vary. The tiling is made in an interlocking design or in squares and oblong shapes; it is soft, very resilient, will not stain and is easily kept clean. A wide range of colors makes it possible to secure a design that will harmonize with any scheme of interior decoration.

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To Whom It May Concern:

Intending purchasers of thermostats, oil burners and liquid fuel governors are cautioned against purchasing and installing devices constructed by a local manufacturing firm in imitation of our patented structures. To protect our rights we have been forced to file suits for infringement in the United States District Court for the Northern District of California against such manufacturer for infringement of our letters patent No. 843,381, No. 986,791 and No. 1,178,118, covering thermostats, oil burners and liquid fuel governors.

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Duration of Closure to Traffic of Concrete Roads

Few demands on the concrete road builder are more urgent than the call of traffic for a quick opening of the road. Indelible evidence is furnished by too many concrete roads either that road officials are over lenient to the demands of traffic or that their barriers have been forced by traffic. One cannot travel far on almost any concrete road without seeing the marks of wheels in its surface, or the prints of horses' hoofs or the cuts of corrugated wheels of tractors. Each mark is proof that the road was opened to traffic too soon after construction. Each rut and depression is a lesion for the attack of traffic. Wear begins at irregularities. None of these facts are unfamiliar to the experienced concrete road builder and no concrete road builder is so unfamiliar with concrete as not to know when it can safely bear traffic. Prints of traffic in a concrete road surface indicate only one thing, which is carelessness. Either the engineer has taken a chance with his concrete or his watch on the work has not been close enough to prevent trespass. The specifications are only rarely at fault, unless it be a fault that they stipulate arbitrary periods of closure to traffic instead of basing the time on direct test. Why not adopt a magnified Vicat or Gillmore needle test for concrete roads to determine when traffic shall be admitted to them? Concrete roads become hard enough to bear traffic in varying periods of time depending upon a number of conditions. Occasionally seven days is ample time, more often two weeks are required and in rare cases safety is certain only after three or four weeks. Why not determine the matter by test and not leave it to a numeral in the specifications?—Engineering and Contracting.

Building Industry Needs Organization

Returning from the annual convention of the National Association of Builders' Exchanges held in Baltimore, Delegate Ralph McLeran of the San Francisco Exchange says:

"The system of organization in most of the Exchanges of the country and which are in a prosperous condition, is an ideal one. Many of the Exchanges have their weekly luncheons, where the different members attend with their name or badge pinned on their coat, thus enabling them to become better acquainted one with another. They often invite prominent men to attend the assembly. There is a positive tendency of the builders of this country to get together and there is no doubt in my mind that within the next few years, with a continuation of the existing spirit among the men engaged in this business as demonstrated at the convention in Baltimore, the building industry of the country will be properly organized."

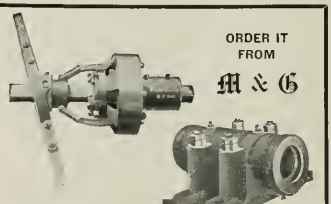
Western Equipment Company

The Western Equipment Company, with offices at 72 Fremont street, San Francisco, and display rooms at Building Material Exhibit, 77 O'Farrell street, San Francisco, is sole representative for the following lines:

Revolving door wall bed; recess, or wardrobe wall bed, two doors; Peek's combination kitchen cabinet and table; Peek's superior wall cabinet ironing board; Peek's superior wall seat (folding up).

In its booklet the company says:

"Peek's disappearing wall bed has no rival. It is in a class within itself. In appearance the bed equals the latest models in stationary beds, either in brass, steel, mahogany or other woods. They are of the same height, width and length of the regular bed."



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Use of Metal Sash Growing

The practice of building in metal such devices as window sash and frames, also doors of varying description and requirements, as well as a wide range of interior fixtures of both utilitarian and ornate character, not to mention the many lesser structural parts commonly used, dates back a great many years. Indeed, as a manufacturing industry this has grown to enormous proportions.

But during the last decade a number of improvements and additions have been made to the former ordinary and somewhat crude forms of construction, as well as many new and practical lines brought out. Noteworthy among these are the improved steel casement windows, which have proven to have many fine points of merit and to meet in a most admirable manner the many varying and difficult qualifications required in sash for first-class buildings in general from a utilitarian standpoint, as well as affording little short of the ideal with respect to a dignified and becoming architectural appearance. For, made as they are in very light size members, as compared with the ordinary wooden sash, formed from fine mild steel of great tenacity, structural strength is increased rather than sacrificed, at the same time obtaining very light and graceful lines in appearance.

These windows, it should be realized, while being of solid rolled section, are in a class quite apart from the factory or warehouse type of sash now so extensively used. The casement type of window has for some time been recognized and endorsed by architects in general from the different standpoints already mentioned as the most desirable form for residences, hotels, hospitals, institutions, office buildings and others.

And in the metal construction the adaptability to any of this class of buildings is increased, for the desirable features are magnified and rendered dependable to the greatest degree. The manufacturers of these windows emphasize such qualities as absolute weather tightness under the most extreme conditions; fire resisting; maximum light area; perfect ventilating, through widely variable methods of placing and swinging the opening sash and with the very carefully constructed hardware furnished, which is of very handsome and neat design with choice of styles. Moreover, as will be appreciated by the practical mind, the durability and freedom from warping or shrinking of this construction is of great importance.

A very high-grade window of this kind is that built by the International Casement Company, with their original factory at Liverpool, England, and having operated a very thorough American factory in Jamestown, N. Y., for the past five years. Their sash has three contacting jamb members or points, rolled in the solid shape, which, together with great precision in fabricating, renders these windows absolutely tight to weather. All the other features mentioned above are found to be very thorough in this company's make of windows. They have equipped a great many buildings of varying classification throughout the East and in other sections of the country, where they have received high commendation from the architects, builders and owners alike.

Mr. E. C. Dehn, with offices in the Hearst building, San Francisco, is their representative for this vicinity, and states that some of the buildings in which they have now installed work or have it in progress are the following: Mrs. Phoebe A. Hearst, "Hacienda," Pleasanton; Miss Juliette Alexander residence, Piedmont, C. W. Dickey, architect, Oakland; Claus Spreckels building, Market and Third streets, in remodeled plan, J. R. Miller, architect; Ch. De Guigne residence, San Mateo, Bliss & Faville, architects; smaller equipments in the State Hospitals at Napa and Stockton, State Department of Engineering, architects. Besides these, Mr. Dehn announces that his company's product is being specified in several plans that are on different architects' boards at present, and he will be pleased to co-operate with owners, architects and contractors in making suggestions for the use of metal casement windows in all types of buildings, and through his personal experience in the metal industry can serve without the necessity of taking all matters up with the Eastern factory.

Should Details Be Furnished Before a Contract Is Signed?

To the Editor:

I read with great interest the article by G. Alexander Wright, entitled "Should Details Be Furnished Before a Contract Is Signed?" and it seems to me that in addition to the reasons put forward by him there is another and equally important reason why all details should be in the hands of a contractor either at or before the time of signing.

As soon as an owner gets ready to award his contract he demands to know definitely just when the work will be completed and having given a date it is the duty of the contractor to get the work done on time if possible.

Therefore one of the first things which a really efficient organization does upon being awarded a contract is to draw up a detailed time schedule. This schedule indicates the latest date upon which each individual item must be started and completed in order that the whole operation may proceed efficiently and be completed on the agreed date.

Often, however, it happens that a job will be started and well under way and then have to be held up while waiting for details, sometimes for days and sometimes for weeks

In addition to disarranging the time schedule, the lost time and loss of efficiency cause a financial drain on the contractor which cannot readily be calculated. C. F. Dingman.

Tunnel More Practical Than Bridge

It was something like a show of Stella at the Exposition the way the several engineers presented their drawings and propositions covering the three designs for a bridge to span the bay waters between San Francisco and Oakland. Earnestly as the representatives spieled the strong points of their bridges, they failed to make a dent in the judgment of the adepts in such big spanning structures. The representatives of the government present put a bomb under their hopes when they declared that the bridges proposed were impracticable in this case because they interrupted ship courses on the full bay, were a menace to moving vessels during fogs and an obstruction to commerce. The chance of a bridge being built in the near future and for that matter at any time, is remote. The proposition of a tunnel under the bay from the ferry building to Oakland seemed far more practicable and attracted consideration. The proposed tunnel is a lithe and sinuous course of concrete lying far below any passing vessel moving on the bay above. According to the engineer, proper ventilation is easily supplied. Two tracks are proposed, and the time of passage through the tunnel would be approximately four and one-half minutes. The engineer claimed that ample backing was behind him in the enterprise. According to the figures produced, the company would get its investment back in twenty years. The applicants have built numbers of tunnels of this kind, and are confident of making the San Francisco-Oakland tunnel a success. The proposition is on the cards to be considered.—San Francisco News Letter.

Solid Stucco for Exterior Walls

An authority on the subject says the type of stucco construction that is giving the best results is that known as solid stucco. No sheathing is used, the lath being applied directly to the studding and plastered on both sides. Three coats are used on the outside and one on the inside of the lath. The first coat is usually about one-half inch thick, the second the same, and the same thickness is used for the back plaster. The finishing coat on the exterior is about one-quarter inch thick. This gives an exterior wall covering 1¾ inches thick with the metal lath so imbedded that the wall is practically a reinforced concrete slab.

Thinks Architects Should Prepare Their Own Specifications

Editor The Architect and Engineer:

The practice, followed by certain architects, of allowing material men, contractors or representatives of manufacturing companies to prepare specifications should be discouraged. In addition to being unethical, an architect cannot serve his client's best interest by this procedure. The first law of architecture should be to guard the client's interest and the architect should either prepare the specifications himself or obtain the services of some competent and unattached engineer or other expert.

Architects are prone to criticise the layman who has the plans and specifications for a building prepared by a contractor, and he is, no doubt, right in his contentions that the building will cost more than one designed by a competent architect, including his fee. The architect, therefore, who entrusts someone's else interests to one of these so-called experts should be doubly censured.

It cannot be expected that specifications prepared by the representative of a concern that has something to sell will not favor the tradesman. Other lines are excluded from the specifications and healthy competition, which should be the essence of all specifications, is destroyed.

Contractors are loath to bid on specifications in which they can see partiality being shown some particular firm or contractor, and, in every case where the specifications have been revised by some unbiased expert, there has been a material reduction in the bids, and ultimately resulted in better and more satisfactory work to the architect, client and contractor.

The architect should be the last person to encourage a practice of this nature, and it would be far better for him to prepare himself an indifferent specification than to resort to a practice that places his client's money at the mercy of some party who certainly cannot have the client's interest at heart. An architect who attempts to save money at his client's expense soon discovers that the public gradually becomes aware that he cannot be trusted and, where a few dollars may have been gained, the continued patronage of the public is being withheld.

Consulting Engineer.

Another Use for Concrete

One of the newest uses for concrete is safes or filing cabinets for storing valuable papers in offices and commer-

cial houses. Its advantage over steel is that it is absolutely fireproof. A number of cases are upon record of papers being reduced to ashes in a steel safe which had apparently stood the heat without serious damage. But the high temperature had penetrated the walls and destroyed the papers within.

Concrete safes are not burglar proof, as they can be readily blown up, but they are much cheaper than steel. Their construction is not a simple matter, because they must have the minimum thickness capable of sustaining the bolts, hinges and locks in order that their weight may be as small as possible.

The fire at the Edison plant at East Orange demonstrated the feasibility of the concrete safe, as some papers left in concrete cabinets built into the walls were found in perfectly good condition.

Concrete safes in small sizes are being made for the fireproof storage of deeds and other valuable documents. They are designed to be placed inside of the large steel safe supposed to be burglarproof.—Exchange.

More Sales Offices

Three more sales offices have been opened by the Kohler Co., Kohler, Wis., manufacturers of enameled plumbing ware. The new branches are as follows:

St. Louis, 1010 Chemical Bldg., J. W. Keicher, manager; Los Angeles, 802 Van Nuys Bldg., Garland Mitchell, manager; Houston, 703 Mason Bldg., J. H. Inman, manager.

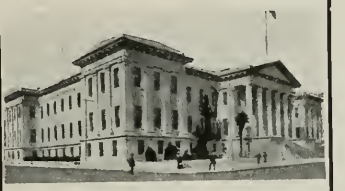
In addition to these the company now has offices in Boston, New York, Philadelphia, Pittsburg, St. Paul, Atlanta, Detroit, San Francisco, Seattle, Chicago and London.

More Buildings for Atascadero Colony

Bliss & Faville, Balboa building, San Francisco, have plans completed for another large building to be erected at Atascadero, San Luis Obispo county, for the Colony Holding Company. The structure will probably be put up by the F. O. Engstrum Company of Los Angeles, which is doing most of the other work there. The building will be a combination department store and hotel and will have a frontage of 240 feet by 100 feet deep and two stories high.

Sales Manager Returns

Mr. Joe Jinnett, sales manager for the Brininstool Company, Los Angeles, recently returned from an extended trip through Oregon, Washington, Idaho and Montana. He has been extending the company's lines through that territory and reports splendid success. Mr. Jinnett was met at the gateway to Yellowstone Park by his wife and son and toured through the park in their machine and thence through Wyoming, Utah and back to Los Angeles.



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C. O. Clausen Designed Jordan Park Court Apartments

In the Building Material Company's attractive advertisement on page 1 of the August issue of The Architect and Engineer the caption beneath a cut of the Jordan Park Court Apartments in Jordan Park, San Francisco, credited Mr. William Little with being the designer and builder. This was an error, as the building was designed by C. O. Clausen, architect, with offices in the Hearst building, San Francisco. The exterior of the building is finished with Medusa waterproofed white Portland cement and presents a very attractive appearance.

A. C. SCHINDLER, President. CHAS. F. STAUFFACHER, Secretary

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The Ideal of the Play Movement

Henry S. Curtis in the American City.

The play movement, as it first appeared on the horizon, was "as a man's hand," and, later on, a small movement intended to furnish amusement for the leisure hours of children. As time has passed, however, it has steadily enlarged in scope and purpose until now we have a vision of a movement which shall some time furnish to every little child at its home a play outfit, including swings, seesaws, sand-bins and similar equipment; that shall see that the streets in residence sections are suitably surfaced, and, if no better place can be found, that special sections shall be roped off at certain hours for the children's play. It means that there shall be a small playground or children's house on the Montessori plan in the center of every tenement block; and that the roofs of our public schools and other public buildings shall be utilized for play; that our schools shall be built with ample grounds, and that there shall be at least an hour a day of organized play in the program for all the children of the elementary schools; that school grounds shall be open and in charge of competent play leaders during afternoons, evenings, Saturdays and summer vacations.

The new ideal includes swimming pools, gymnasiums and auditoriums in connection with our new schools, where during the colder weather there may be swimming, dancing, games, theatricals and moving pictures for general entertainment. Where it is impossible to furnish adequate facilities of this sort in connection with the schools, the municipality should provide swimming pools, ball and tennis grounds and adequate facilities for field athletics. Under the play authorities there should be organized excursions and camping trips to places of beauty or interest lying round about the cities, and the children should have opportunities to become acquainted with the birds, trees, flowers and natural beauties of the neighborhood. Our national holidays should be suitably celebrated with festivals by the people. More and more great community centers should be developed, where the people could meet together frequently to hear music, vocal and instrumental, to see pageants, festivals and the like. As time goes on, moving pictures, and very likely the theater itself, will probably become public institutions in our cities.

In order that these ideals may be realized and that each man and woman and child may lead a life worth living, the play movement proclaims to everyone the right to leisure. It bespeaks the universal weekly half-holiday, and, wherever possible, the eight-hour working

For the consideration of architects

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day. This is no small program. It will not be realized at once, but we are moving in the right direction, and rapidly. We have made a good beginning along nearly every one of the lines mentioned.

Goes to the Orient

Mr. H. M. Friesleben, vice-president and foreign manager of the Pacific Sanitary Manufacturing Company, has just sailed for Japan on an extended business trip through Japan, China, Siberia, the Philippines and Hawaiian Islands. He carries with him a sample line of the "Pacific" sanitary specialties, which should demonstrate to the architects and others visited the excellence of Pacific Coast goods and lead to the introduction of "Pacific Fixtures" in all parts of the Pacific. Mr. Friesleben is not only a gentleman of pleasing personality, but is also an accomplished linguist, and we are certain that the large trade his company already enjoys in the Orient will be greatly increased by reason of Mr. Friesleben's visit.

A New Rock Plant at Niles

A new gravel, sand and crushed rock plant, the Niles Canyon Stone Products Co., has just been completed at Niles, Alameda county.

It is located directly on the Western Pacific railroad tracks and bordering on the Southern Pacific Company tracks.

The company was established in California by a well known engineer, A. C. F. Locke, who has made the plant one of the most efficient in the West. Mr. Locke has combined in this plant all of the latest ideas and achievements in construction and machinery. The capacity of the plant is indicated by the size of a shovel which is used, the latter hauling three tons gravel at one scoop.

The plant will be under the management of Mr. Locke.

"Thru-an-Thru" Terra Cotta

The Steiger Terra Cotta and Pottery Works, San Francisco, reports a favorable reception for its new product—"Thru-an-Thru" terra cotta—a ware with coloring intermixed in the texture of the body and hence the same all thru. This material is suited for the highest class of work. Already numerous inquiries have come in from architects and builders. The Steiger company is supplying terra cotta for the new wings being added to the City and County Hospital; also terra cotta for the Hall of Justice at Sacramento; a new department store at Logan, Utah; the Lange and Bergstrom apartments in San Francisco and numerous other buildings throughout the State.

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National Paving Brick Manufacturers' Annual Meeting

The National Paving Brick Manufacturers' Association has arranged the details necessary for a study and conference in brick pavement construction, to take place Friday, October 6th, at Paris, Ill. The annual business meeting of the association will be held October 5th, at 10 o'clock a. m., at the Deming Hotel, Terre Haute, Ind.

Headquarters for the occasion will be the Deming Hotel, Terre Haute, Ind., from which place those participating in the paving conference will go by interurban railway to Paris, Ill.—an hour's ride—where the construction demonstration will take place, which will consist largely of steps showing the economy of construction details in building a brick pavement by laying the brick in green mortar.

An important purpose of the effort will be to show how such a pavement can be built with the least possible cost and yet maintain all the essentials of worth.

Engineers who are deeply interested in the study and inquiry into the economy of monolithic construction will be pleased with this announcement. The money expenditure for roads is so great that a deep interest as to their economic value is manifest everywhere by chambers of commerce and automobile clubs. This occasion will afford bodies of this character an opportunity to make a careful investigation and examination into the merits of this kind of road that cannot be gained in an ordinary inspection trip.

The conference will be characterized by a critical study of what may be seen in every phase of the construction and the finished pavement.

All who expect to be present are requested to notify Will P. Blair, secretary, Cleveland, Ohio, to that effect.

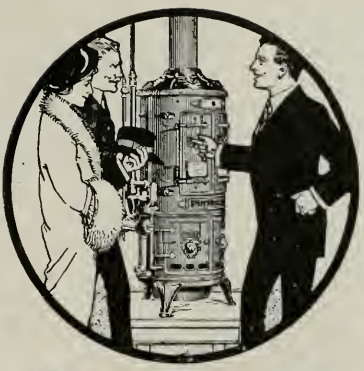
Suit for Architect's Fees

An echo of the case of Robert M. Taylor, architect, vs. the Huntington Park Union High School District was heard recently in Judge Shenk's department of the Superior Court at Los Angeles, when the court overruled the third demurrer of counsel for the High School District.

The original suit was instituted in 1913 by Mr. Taylor's attorneys and was demurred to by counsel for the defendant school district.

The demurrer was sustained by the court and Mr. Taylor's attorneys submitted an amended complaint to which the school district again demurred.

The court again sustained the demurrer and in consequence the action was not pressed during the past three years.



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However, about two months ago Mr. Taylor brought the case to the attention of Mr. Raymond P. Smith, former material man, who, after investigating it, placed the case before Mr. Robert E. Abbott, attorney-at-law, with whom he is now associated. Mr. Abbott advised Mr. Taylor as to the merits of the case, with the result that a third amended complaint was submitted to the court, to which the defendant school district again presented a demurrer.

After several weeks' deliberation the court overruled the demurrer of the county counsel representing the Huntington Park Union High School District and decided the points of law sufficient to sustain Mr. Taylor's action.

Both Mr. Abbott and Mr. Smith are confident that the final outcome of the suit will mean a judgment in favor of Mr. Taylor.

The action was brought in 1913 by Mr. Taylor to recover fees due him for drawing plans and specifications for a new high school for the Huntington Park Union High School District. The school board did not use the plans, etc., owing to a legal controversy, and refused to recompense the architect for his services.

Spencer Gets Watson Screen Agency

Richard Spencer, Hearst building, San Francisco, has been appointed sole Pacific Coast representative for Watson wood, steel and bronze frame screens and screen doors. Mr. Spencer is also California agent for Monarch metal strips, Mesker steel sash, Walger awnings, "Sanitread" safety treads and Guaranty Wire & Iron Works' warehouse, folding and elevator doors.

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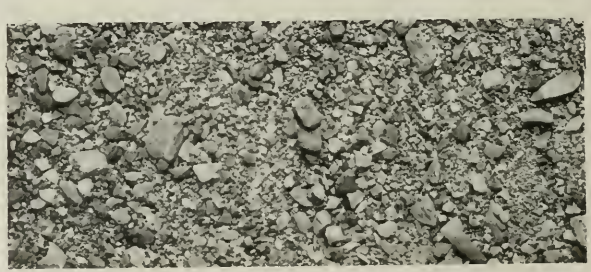

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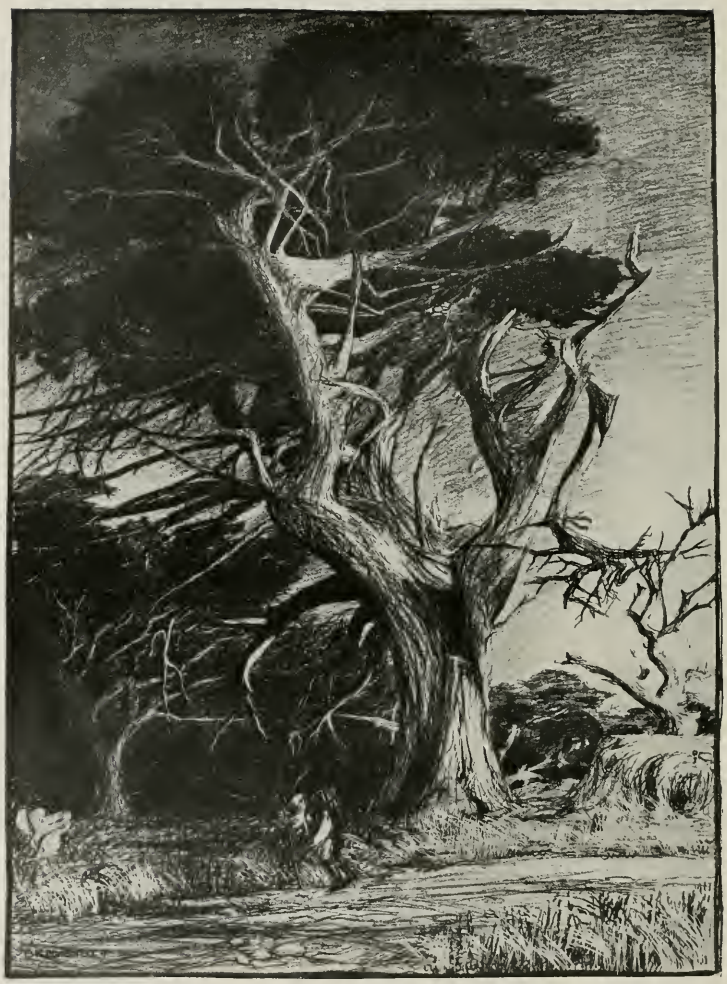
Issued monthly in the interest of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast. Entered at San Francisco Post Office as Second Class Matter.



CATHEDRAL OF THE CALIFORNIA FOREST
C. K. BONESTELL, JR.

Frontispiece
The Architect and Engineer
of California
for October, 1916

THE
Architect and Engineer
Of California

VOL. XLVII. OCTOBER, 1916 No. 1.

RESIDENCE PROF. A. V. POPE, BERKELEY
Wood & Simpson, Architects

The Oakland Architectural Exhibition

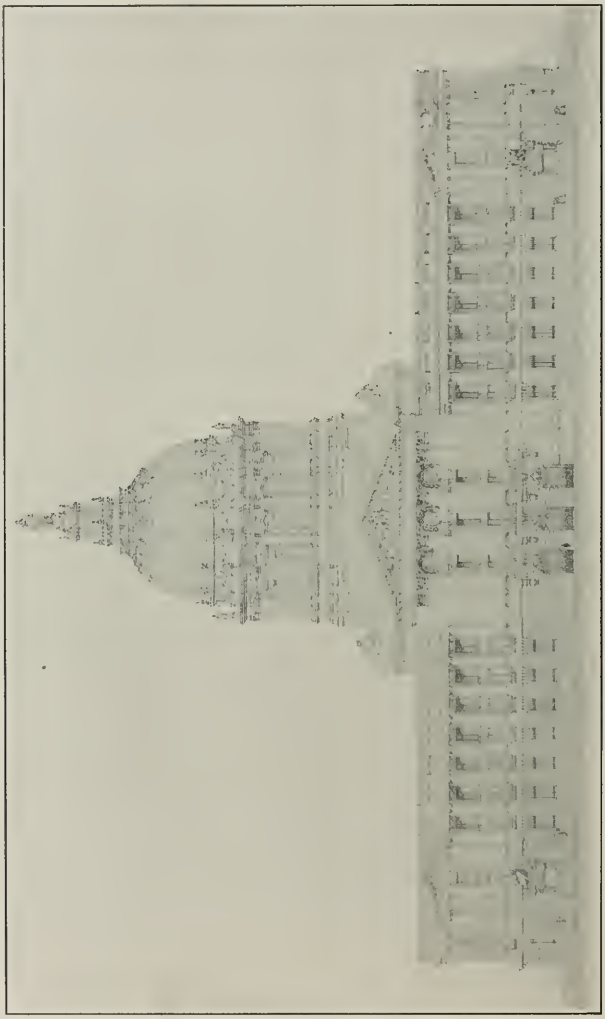
By IRVING F. MORROW.*

THE first exhibition of the Alameda County Society of Architects was opened on October 2 in the Oakland Municipal Auditorium. The use of the art gallery and of the balcony foyer of the opera house for this purpose served as another demonstration of the adaptability of this structure to varied ends, and of its value as an investment to the community. The rooms are agreeably arranged and lighted, and possess just the proper balance between decorative interest and restraint to make them appropriate for exhibition requirements.

In general appearance the galleries were orderly and attractive. The hanging of the exhibition was neatly arranged. Pictures were almost uniformly placed close to a normal line of vision, and without undue crowding. Work was grouped according to its nature—monumental, educational, residential, etc.—not rigorously, to be sure, but with sufficient consistency to indicate the intent. The grouping of photographs largely to themselves preserved unity of appearance. The only flagrant offense in arrangement was the frequent scattering of illustrations of the same building—plans, elevations, perspectives, details—through widely separated parts of the galleries. In an architectural exhibition this is unpardonable.

The work displayed was almost without exception from offices in San Francisco, Oakland, and Berkeley. In quality its average was acceptable, but undistinguished. There was little work of outstanding merit, and no exhibits which, either by method of presentation or by position in hanging, created an important focus of interest. On the other hand, there was a commendably small amount of work which failed to measure up to the standard of common decency which warrants exhibition. If the general impression left by the exhibition was one of smallness, it was not because

*Member of the firm of Morrow & Garren, Architects, Chronicle Building, San Francisco.



EAST ELEVATION, SAN FRANCISCO CITY HALL.
BAKEWELL & BROWN, ARCHITECTS

the galleries were really too restricted for an ample and interesting display. It probably was due in part to the general monotony of achievement—acceptable, as I have said, but undistinguished—and in part to the fact that almost everything shown was already familiar, either through previous exhibition or publication, or through the completed structures themselves.

To single out of such a display many individual exhibits for comment would be a tedious and unprofitable task; yet there are a few things which should not go unnoticed.

Bakewell & Brown's San Francisco City Hall was surely rightly placed where it was the first thing seen on entering and the last thing seen on leaving the main galleries. This is not to say that the building is not open to various, and some serious, criticism; but neither is this the place for a detailed critical discussion. The fact remains that it was the most accomplished architectural achievement in the exhibition. Beside the beautifully rendered elevation and the photographs of the completed building it would have been of the greatest interest to set the original competition drawing.

Of great interest to the general public as well as to the profession was the Southern Pacific building of Bliss & Faville. Looked at in the light of the opportunities which should lie in a building so large and so important, this seems a rather uneventful performance. Yet considering the sobriety of the design and recalling the careful choice of materials and the finished execution which we have grown accustomed to expect from these architects, there is no doubt that it will be a notable addition to the city's main thoroughfare. Our streets would be places of far greater dignity and repose if all their façades were designed with equal restraint.

The office of John Galen Howard showed perspectives of new buildings at the University of California. These are designed in the reserved, almost reticent, classical spirit already made familiar in the existing buildings on the Campus.

Louis Christian Mullgardt exhibited work in Yosemite Valley which showed an unusual (but his usual) sensitiveness in the handling of irregular masses; also a design of notable freedom and vigor for the Market Street Realty building.

Rather prominently placed were drawings of "the Oakland museums," by W. H. Ratcliff, Jr. Without disparaging Mr. Ratcliff's design, we may hope that this is nothing more than a scheme for the employment of idle moments, bearing no sanction of the City Park Department. For to locate buildings in the city's one large and accessible park, and in that part which contains almost the only remaining oaks in Oakland, would surely be quite unwarranted.

Beyond this, a discussion of individual exhibits would mean a repetition of familiar comment on familiar buildings, or a perfunctory catalogue of buildings good but of secondary importance, not justifying detailed notice in a general review.

Turning from the architecture itself to its presentation, the exhibition was not lacking in drawings of interest in all media.

A number of drawings by C. K. Bonestell, Jr., in a modern convention characterized by flatness of plane and pallor of color scheme, showed notable success in allowing the architecture to clearly emerge through the mannerism of the presentation. Mr. Bonestell also had a number of pen sketches of merit (most of these from the office of Willis Polk & Co.) and a couple of tree subjects of unusual effectiveness.

In the aforementioned flat-pallid vein were also a number of drawings by Wood & Simpson, interesting, but architecturally less effective.

Woollett & Woollett have made applications of various broken color methods with no small degree of cleverness. But the inherent characteristic of all such methods—the emphasis of atmosphere at the expense of form—can not be escaped, and renders the drawings more interesting as experiments than appropriate as architectural presentations.

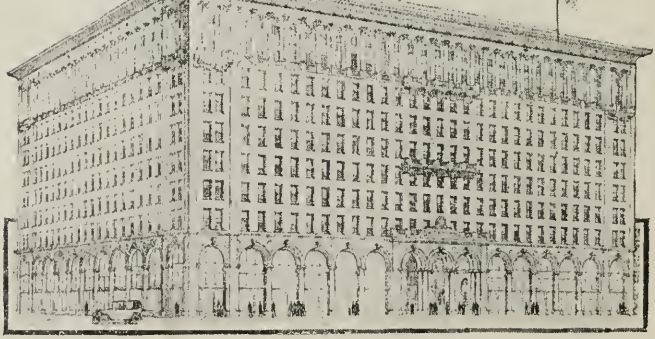
Of the more traditional types of rendering there were equally conspicuous examples. The above-mentioned drawing of the San Francisco City Hall is a model of delicate India ink work. Few draughtsmen today possess the courage (or the ability) to execute a drawing with such simplicity.

Albert Farr showed a number of drawings in pencil and in water color which were handled with exquisite charm and facility.

For sound, vigorous draughtsmanship, and an extreme subtlety in the suggestion of the atmosphere of a building's surroundings, no drawings exhibited were comparable to those of Louis Christian Mullgardt. It is safe to say that no one of the many painters who have lavished time and paint on the portrayal of the Yosemite Valley has so adequately rendered the monumental scale of our mountain cliffs as do these drawings which were designed primarily to explain, and do explain, an architectural composition.

The paucity of sketches from nature rendered all the more refreshing a number of delightful European sketches in pencil and water color by Henry H. Gutterson.

The Year Book published in connection with the exhibition is fairly representative—in fact, more than representative; for it contains illustrations which diligent search failed to reveal in the exhibition. The presentation of the cuts is poor in quality, and illustrations are arranged according to no recognizable plan; incorrect attributions of authorship have also crept in. A list of exhibitors would have been more to the point than the list of members of the San Francisco Chapter of the American Institute of Architects.



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Bliss & Faville, Architects

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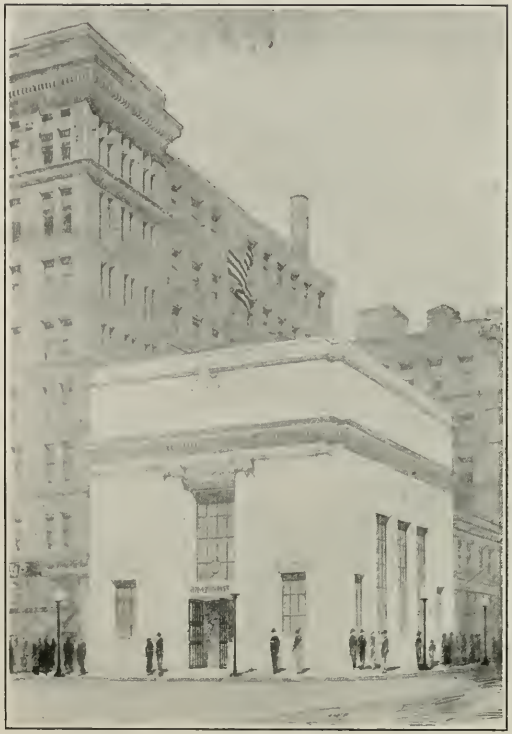
J. J. DONOVAN, ARCHITECT
HENRY HORNBOSTEL, CONSULTING ARCHITECT

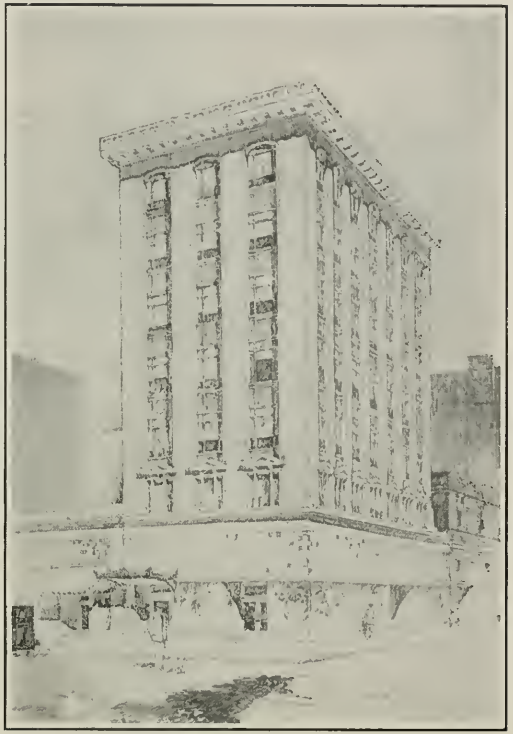
PERSPECTIVE, NEW POSTOFFICE, PORTLAND, OREGON
Lewis P. Hobart, Architect

HAWAIIAN BUILDING, P.-P. I. E.
C. W. Dickey, Architect

UNIVERSITY OF CALIFORNIA HOSPITAL
LEWIS P. HOBART, ARCHITECT



BANK BUILDING
Wood & Simpson, Architects



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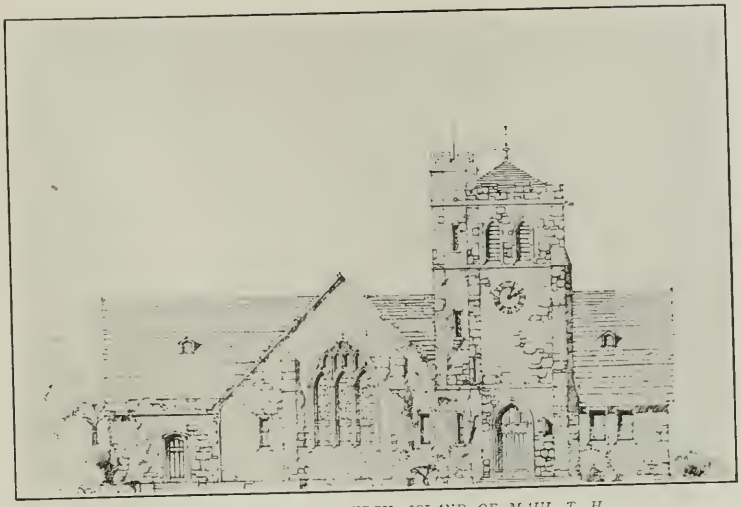
C. W. McCall, Architect

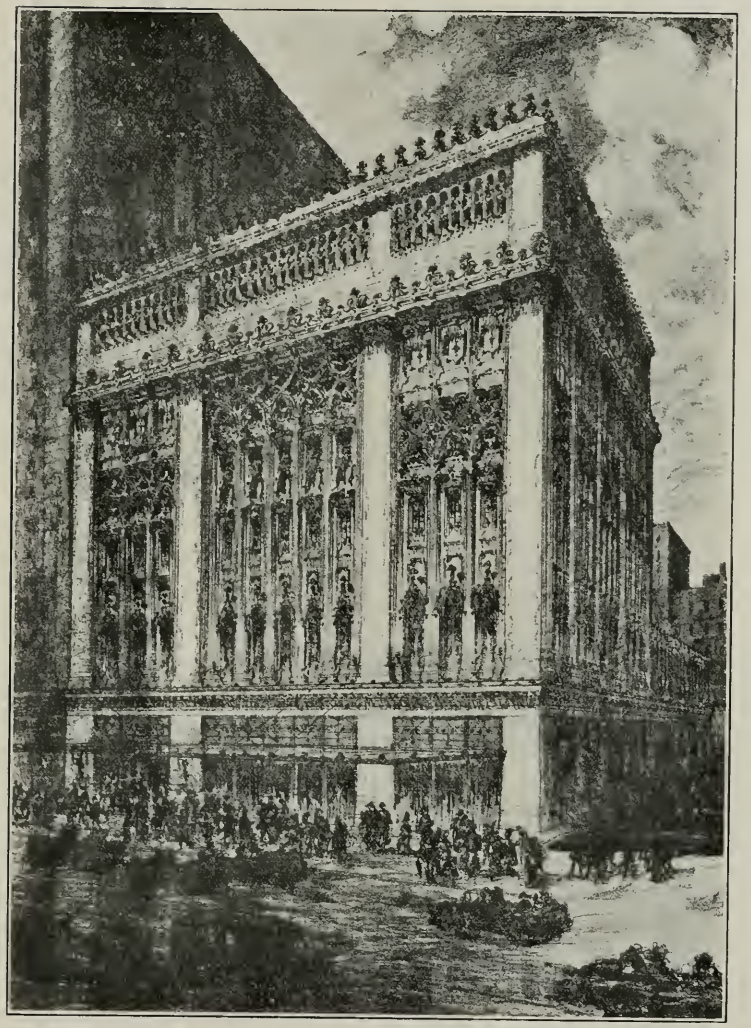


BALDWIN MEMORIAL CHURCH, ISLAND OF MAUI, T. H.
C. W. Dickey, Architect

SACRAMENTO PUBLIC LIBRARY
Loring P. Rixford, Architect

CHURCH, SAN MATEO
August G. Headman, Architect

SANTA FE STATION, SAN DIEGO
Bakewell & Brown, Architects



MARKET STREET THEATER
LOUIS C. MULLGARDT, ARCHITECT

THOMPSON BUILDING, OAKLAND
Walter D. Reed, Architect

SEVENTH STREET BRANCH, OAKLAND BANK OF SAVINGS
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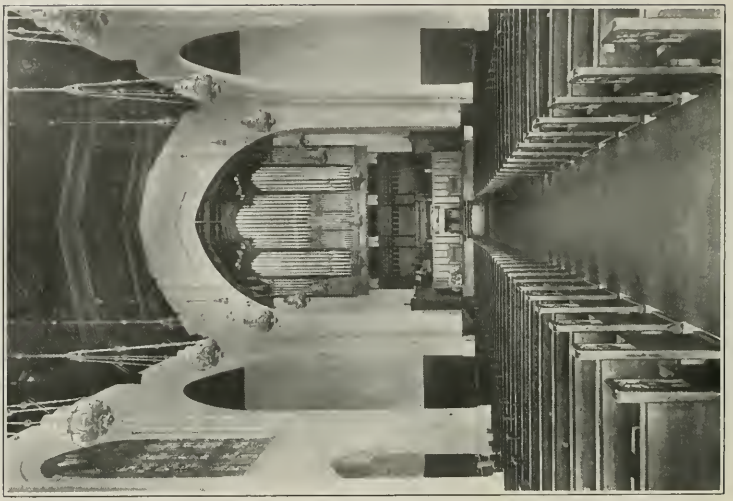
KINGS DAUGHTERS HOME, OAKLAND
Julia Morgan, Architect

COURT, Y. W. C. A., OAKLAND
Julia Morgan, Architect



INTERIOR, FIRST PRESBYTERIAN CHURCH, OAKLAND
William C. Hays, Architect

FIRST PRESBYTERIAN CHURCH, OAKLAND
William C. Hays, Architect

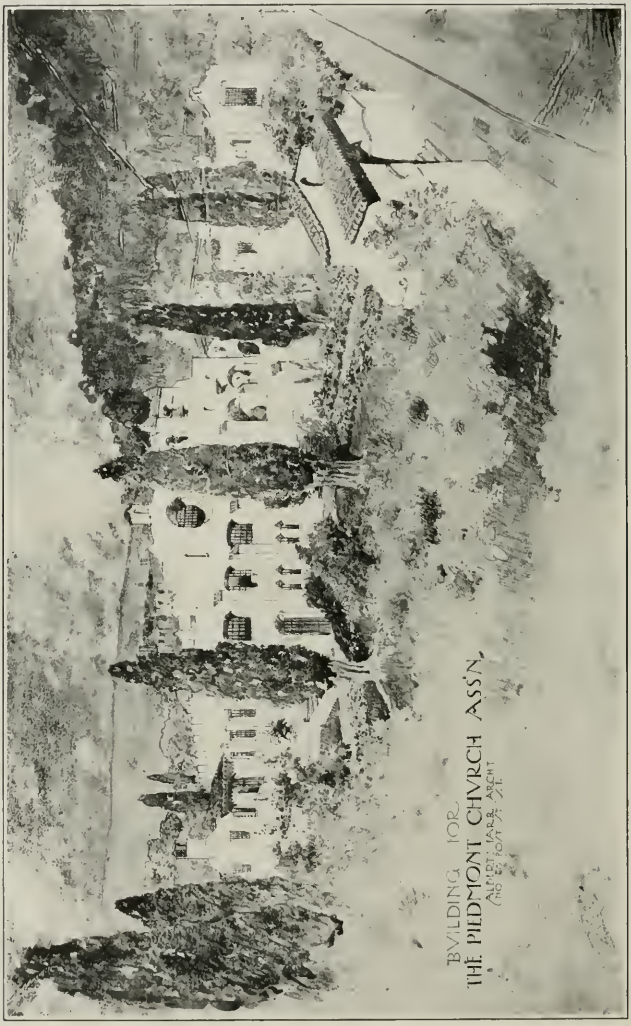
PACIFIC UNITARIAN SCHOOL BERKELEY
WILLIAM C. HAYS, ARCHITECT

SYNAGOGUE FOR FIRST HEBREW CONGREGATION, OAKLAND
G. Albert Lansburgh, Architect

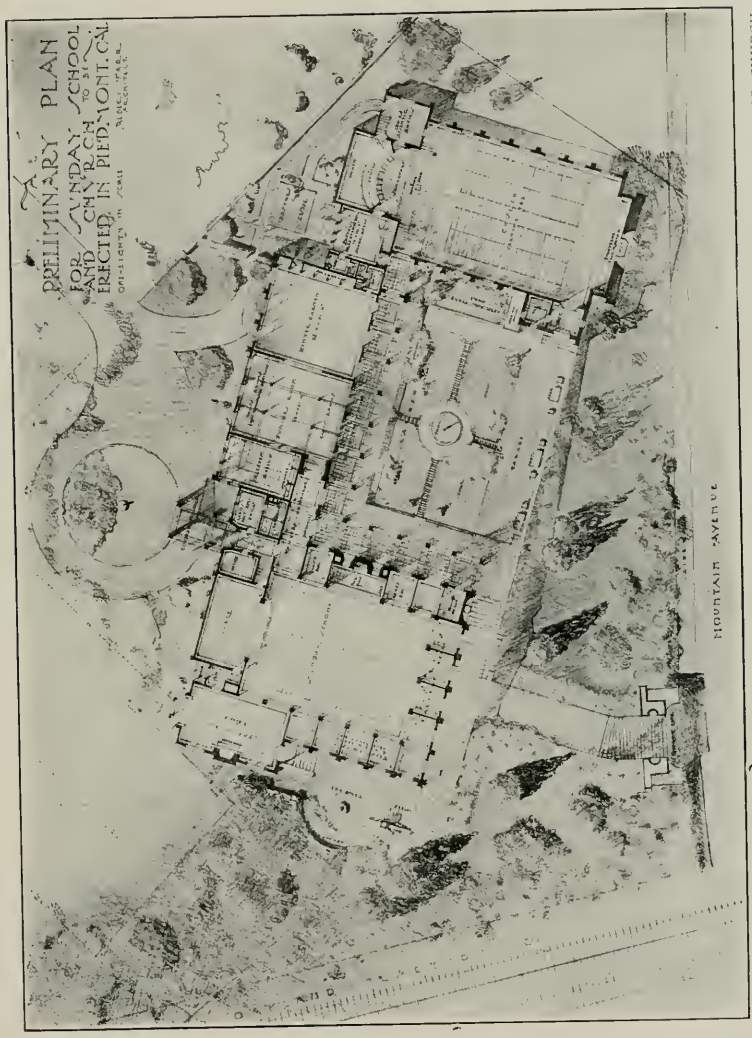
COLONNADE, SYNAGOGUE FOR FIRST HEBREW CONGREGATION, OAKLAND
G. Albert Lansburgh, Architect

MOTHERHOOD
Gutzon Borglum, Sculptor

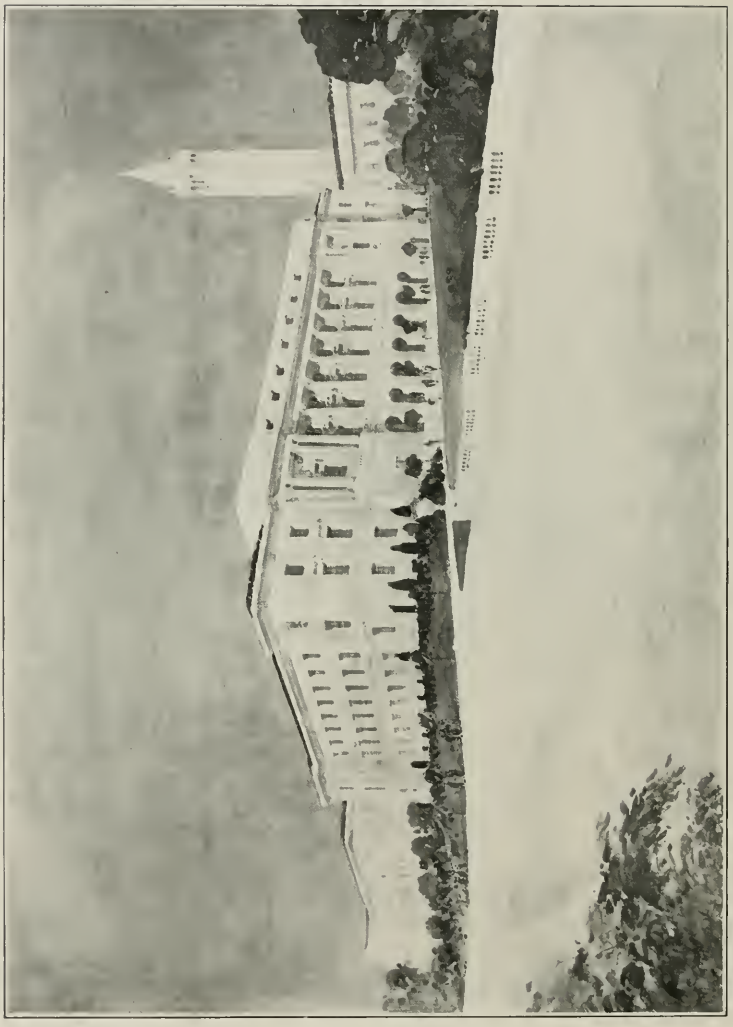
CLIFT HOTEL, MAIN LOBBY
G. A. Applegarth, Architect



DESIGN FOR CHURCH, PIEDMONT HILLS
ALBERT FARR,
ARCHITECT



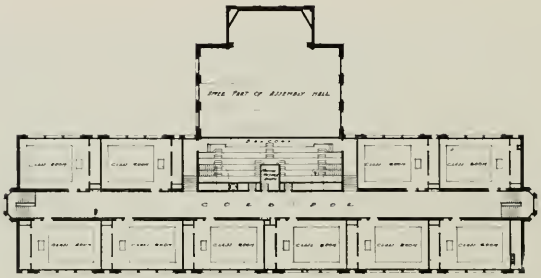
GROUND PLAN. PIEDMONT CHURCH
ALBERT FARR. ARCHITECT



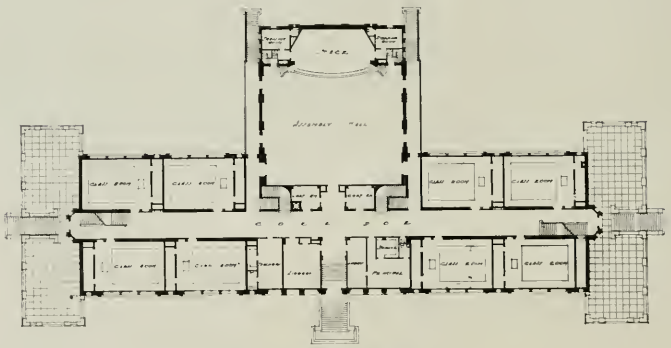
CLASS ROOM BUILDING, UNIVERSITY OF CALIFORNIA, BERKELEY
JOHN GALEN HOWARD, ARCHITECT

WEST FRONT, AGRICULTURAL GROUP, UNIVERSITY OF CALIFORNIA, BERKELEY
John Galen Howard, Architect

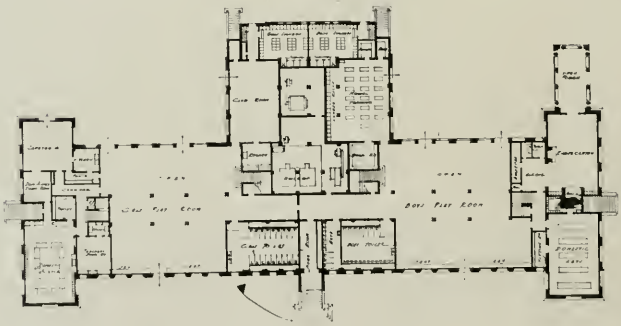
CHEMISTRY BUILDING, UNIVERSITY OF CALIFORNIA, BERKELEY
John Galen Howard, Architect



SECOND FLOOR PLAN



FIRST FLOOR PLAN



GROUND FLOOR PLAN

CLAWSON SCHOOL, OAKLAND
J. J. DONOVAN, ARCHITECT

CLAWSON SCHOOL, OAKLAND
J. J. Donovan, Architect

THIRTY-SECOND STREET ELEVATION, CLAWSON SCHOOL, OAKLAND
J. J. Donovan, Architect

EMERSON SCHOOL
J. J. Donovan and J. G. Howard, Associate Architects

MISSES RANSOM AND BRIDGES' SCHOOL FOR GIRLS, PIEDMONT
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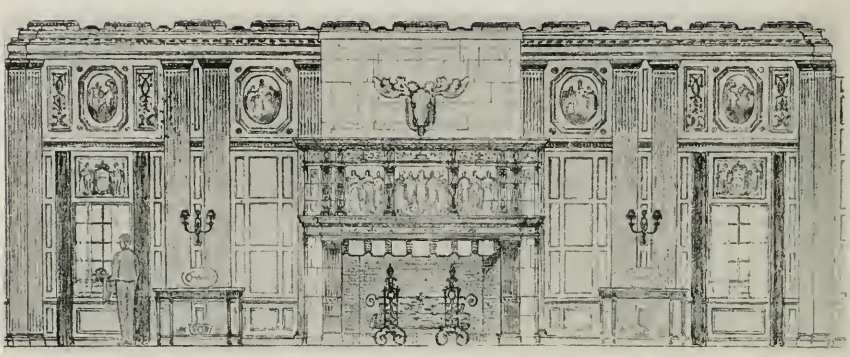
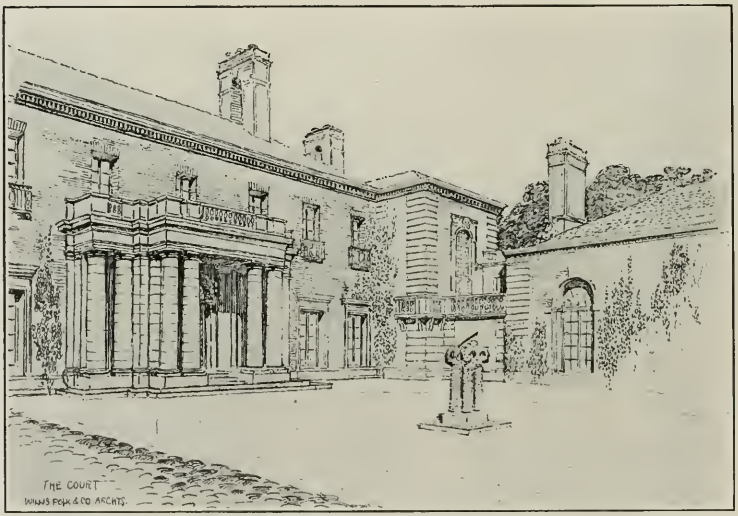
Harris Allen, Architect

RESIDENCE HORATIO P. LIVERMORE
C. W. McCall, Architect



SAN FRANCISCO COMMERCIAL CLUB
W. H. Ratcliff, Jr., Architect



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William Knowles, Architect

SPANISH COURT, HOUSE FOR MRS. ANDREW WELCH
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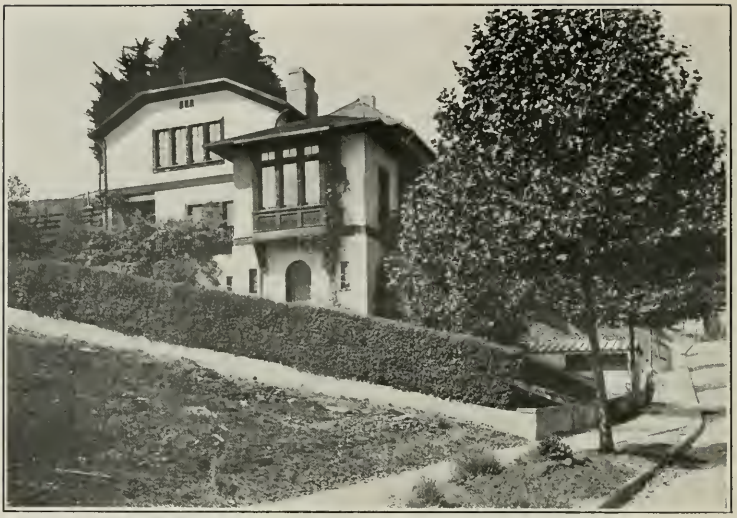
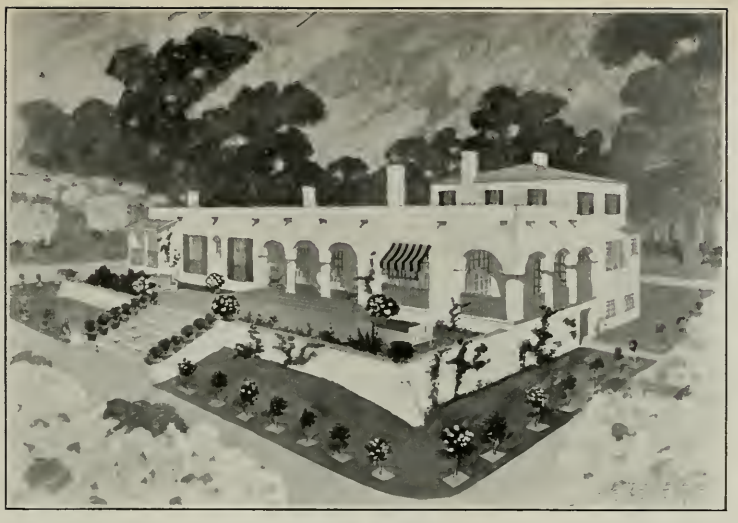


RESIDENCE HENRY H. GUTTERSON, BERKELEY
H. H. Gutterson, Architect

RESIDENCE CHARLES M. DUTTON
H. H. Gutterson, Architect



RESIDENCE MR. HAWKINS
Albert Farr, Architect

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ST. VINCENT DE PAUL CHURCH AND PARISH HOUSE, SAN FRANCISCO
SHEA & LOFQUIST,
ARCHITECTS

BEVERLY HILLS SCHOOL, BEVERLY HILLS, CALIFORNIA
W. J. Dodd, Architect

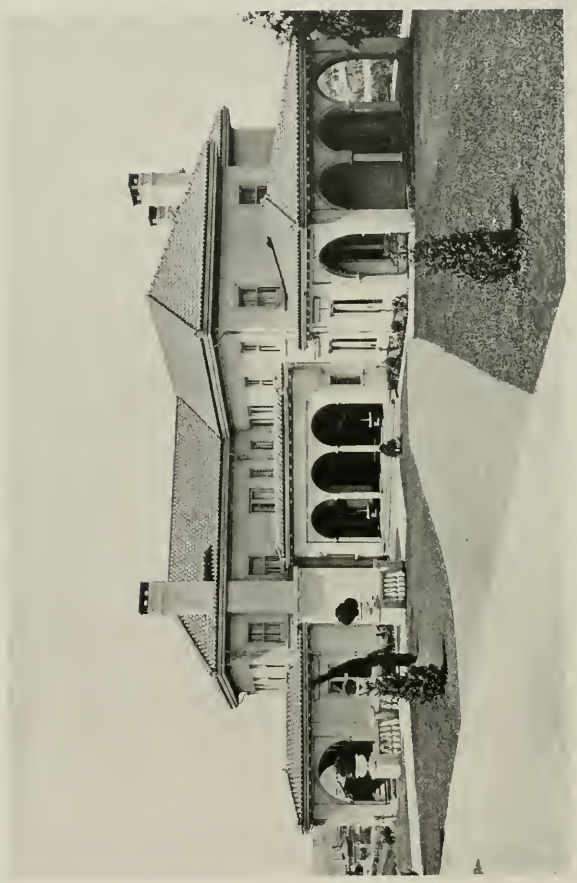
The Charm of a Tile Covered Roof

By FREDERICK JENNINGS.

THE artist or writer, seeking to portray the charm or picturesqueness of some remotely situated city—of a foreign land, for instance—invariably gives us first a glimpse of that city's roofs. And, moreover, the character of its roofs, actually remaining as the dominant note of the former's picture or the latter's description, usually resolves itself into our most lasting impression of the city depicted. The explanation, perhaps, is found in the simple fact that, at a distance, it is the roof of a building, save in the matter of the modern skyscraper, which stands forth with greatest prominence.

However, back of this explanation lies much that is worthy of extended consideration. For one thing, the explanation itself illustrates something of the roof's importance, especially from an aesthetic point of view. Because it is the feature first seen from a distance, and because the first impression has much to do with the last, the roof should be attractive—and attractive to the extent of adding to, rather than detracting from, the beauty of the structure as a whole. It, in other words, should comprise, whenever the style of architecture will at all permit, a sort of decorative crown; and, furthermore, to a certain extent at least, it should be distinctive—possess character, individuality.

In America, until recently at least, we have too commonly regarded the roof from purely a utilitarian viewpoint. We have designed architectural creations that, in other respects, have shown masterful, conscientious workmanship, but when it has come to the roof we have seemed to consider only the necessity of providing a covering, with little or no display of appreciation of the full possibilities therein afforded. However, in recent years we are beginning to manifest a realization that a properly executed work of architecture does not mean only a matter of wall design, but that it also may include a certain consideration for the style of the roof. Also, although



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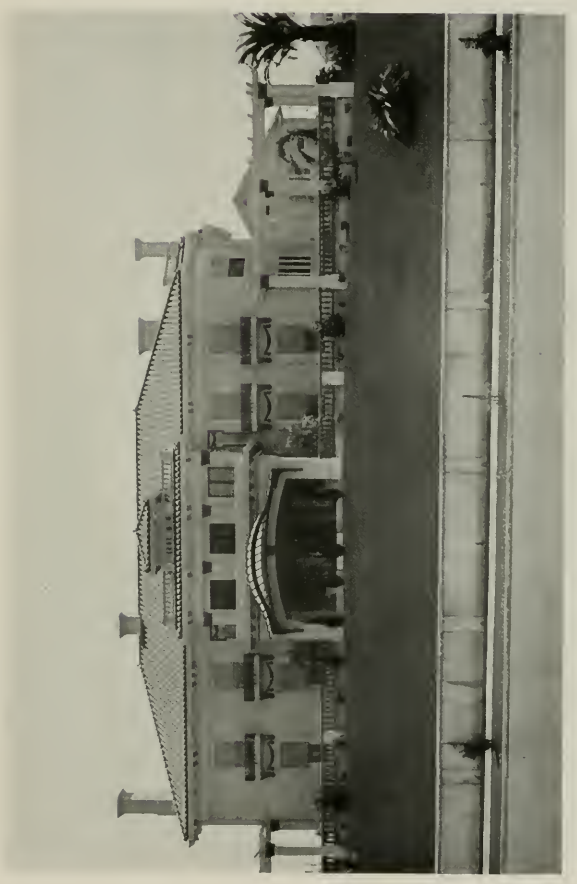
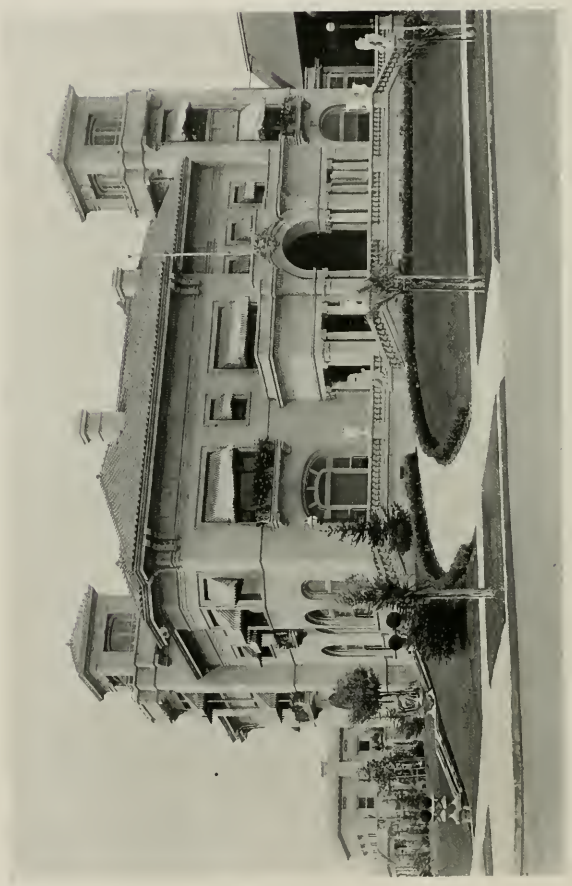
MILHAN BROTHERS, ARCHITECTS

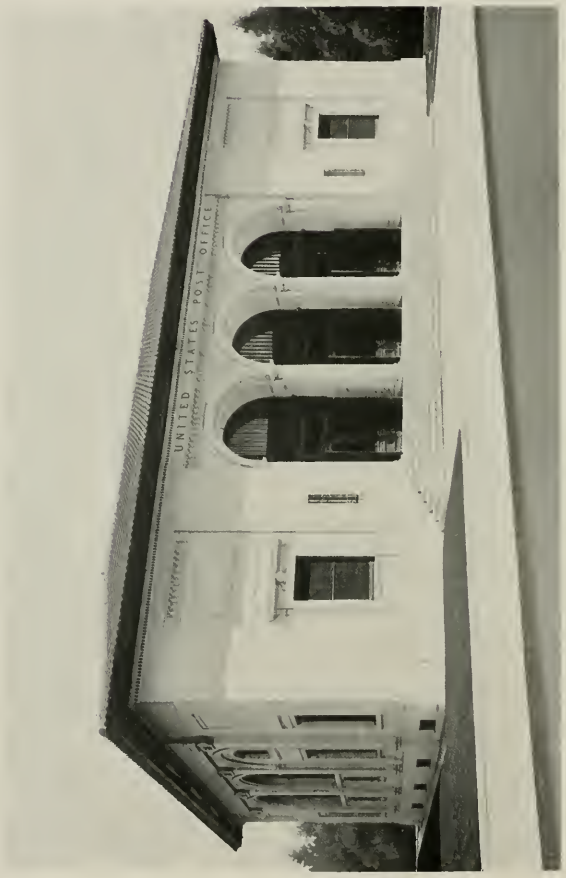


ISAAC MILBANK RESIDENCE, COUNTY CLUB DRIVE, LOS ANGELES
G. LAWRENCE STIMSON CO.,
DESIGNERS



RESIDENCE MR. G. ALLAN HANCOCK, LOS ANGELES
JOHN C. AUSTIN, ARCHITECT

RESIDENCE MRS. NELLIE C. VAN ARSDALE, SAN FRANCISCO
A. LACEY WORSWICK, ARCHITECT



UNITED STATES POST-OFFICE BUILDING, ALAMEDA
OSCAR WENDEROTH, SUPERVISING ARCHITECT, TREASURY DEPT., WASHINGTON, D. C.

UNIVERSITY OF ARIZONA AGRICULTURAL BUILDING, TUCSON, ARIZONA
BRISTOW & LYMAN, ARCHITECTS

we had grown accustomed to seeing it so universally employed as to imagine it to be thoroughly adaptable to all styles, we are likewise learning that the shingled roof does not always do full justice to our architectural efforts, but that there are other types of roofs of much greater effectiveness.

And as a result of this awakening, the tile-covered roof, the oldest type of roof in existence, is again coming into its own. Its popularity in the last few years, in fact, has become almost phenomenal. And, furthermore, we find it being adapted, with excellent results, to buildings of all kinds—public institutions, industrial plants, homes of every description from the modest to the most palatial, and so forth.

In California tile as a roof covering has become particularly popular. This State, in fact, ranks in its production and use of burned-clay roofing tile as the second largest State in the Union, which, perhaps, has much to do with the fact that California's architecture has been more widely commended and copied than has been that of any other section of the country. At least our architects have come to be recognized as masters of their craft; and it is equally true that they were among the first, in America, to realize the real importance of the roof's design, as affording a means of accentuating the beauty of their creations. They have recognized the fact that the tile-covered roof possesses character, artistic qualities, and is maximumly effective in producing desirable color schemes; and as a result our landscapes, city and country, hillside and valley, have been graced with architectural creations which elicit admiration from all who behold.

In the popularization of roofing tile the manufacturer also has played a very important part. In fact, it is he, collectively speaking, who has given it its extensive practicability. Through the use of improved machinery and by devoting close study to the needs, he has succeeded both in getting its cost down to a point well within reasonableness and in broadening the scope of its possible adaptability. Also, as compared with the earlier machine-made product, he has perfected it into one of the most substantial and lasting kinds of roof covering that can be obtained. Briefly, therefore, burned-clay roofing tile—because it is obtainable in many styles and colors, is suitable for practically every type of architecture, is maximumly durable, and possesses, when laid, true character and beauty—may be accounted as solving the roof problem from both the aesthetic and the utilitarian angle.

In order to enumerate some of the styles and colors in which roofing tile is manufactured today, it seems necessary to mention the Los Angeles Pressed Brick Company. This company, with its output of this kind amounting to over seventy per cent of the total production in California, manufactures the tile in nine distinct styles—namely, large, small and special Mission, large and small Spanish, Granada, Italian, "Oxford," and shingle tile. Without going into detail, it may be stated that the seven first named belong to the corrugated type, and that the last two produce a roof which, at a short distance, has every appearance of being covered with ordinary cedar shingles. However, between each style there is a considerable difference which becomes readily discernible on close inspection, and which is especially important when it comes to carrying out certain architectural schemes. It is possible to produce the tile in colors ranging in shade from light to dark red, and in gray, golden and bronze, as well as the glazed variety in soft green tones.

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Kysor & Biggar, Architects

From the preceding paragraph it is easy to understand the broad or versatile appeal of this material. In some one of these styles or colors it can be employed in almost any scheme. Although it may not be the kind best adapted to use in every particular case, surely it enables a greater variety of treatments than is possible through the use of any other roofing material. And the roof thus covered is, above all, a permanent roof. When properly laid, it is free from leaks, wear or repairs, is fireproof, is a non-conductor of heat and cold, and its natural colors never require renewing. Briefly, its first cost, although somewhat greater than that of some other roofing materials, is the only cost.

In further proof of how appropriately burned-clay roofing tile is adaptable to different styles and classes of architecture, we are here presenting a number of illustrations which speak for themselves. In California the tile roof has not only been used for residences of nearly all classes, costs and architectural styles, but also we find it employed for schools, colleges, libraries, churches, museums, railway depots, postoffices, industrial plants, and many other structures. The United States Government is a particularly extensive user of the material; and not only has it used such roofing for many of its postoffices in the State, but also for many of its military structures—notably for over thirty of its buildings at the Presidio and Fort Winfield Scott, at San Francisco.

Naturally the old Missions of California have been a considerable inspiration toward arousing interest in the tile roof in this State, and due acknowledgment therefor must be made in this connection. These ancient-looking structures, comprising picturesque and romance-endowed monuments to the earliest appreciation of the greatness of our land, have been long and much admired, but, perhaps, were it not for their roofs of tile, hand-made by or under the direction of the old padres, their charm would have been only half as great. But the tile roof, as a type, is ages older than these Missions. A half-thousand years before Christ it was popular in Greece, in the building of temples, and ever since then it is closely interwoven into the history of architecture.

Does it Pay to Skin Concrete?

AN example of the dangers of "skinning on cement" was witnessed in New York City on August 23 last when a tenement building in course of construction collapsed, killing two men and injuring fifteen others. A bricklayer testified to the fact that he overheard one of the owners of the apartment house tell another that he feared the building would fall if more cement was not used in the mixture. Strict inspection on the part of city officials would have averted the catastrophe. The apparent laxity on the part of the New York inspectors should be an incentive to building commissioners of every municipality in the country to watch their own inspection force and see that they are capable of fulfilling their jobs and honest enough to do it for the welfare of the community.

"Skinning on cement" has brought many a building to ruin and taken many a contractor off his feet. Despite the fact that being "stingy" with cement is a bad business, a dangerous business, and that the leading contractors condemn such action, every once in awhile a new building or a building under construction will crash and at once goes up a howl, "somebody was trying to skin on cement; they all do it."

The following by C. W. J. Melville, C. E., was published recently in the New Orleans Building Review, and is a timely warning of the dangers to be encountered in trying to put up a concrete building with a lean mix:

In making up specifications architects and engineers are sometimes tempted to use a leaner mix for concrete than their good judgment would indicate, with the idea that they are making a considerable saving in the ultimate cost of the work.

Some small and unreliable contractors are also in the habit of skinning the mix of concrete—that is, leaving out as much cement as they think the architect will stand for—under the impression that they are making considerable financial gain for themselves.

The following table is worked out with the view of showing that there is very little economy to the owner when the architect specifies a lean mix, and also very little financial gain to the contractor when he skins his mix without the consent of the architect, even though he gets away with

MIX	Cost per Cubic Yard Materia's Only	Total Cost per Cubic Yard Complete	Crushing strength per Sq. Inch	Saved over 1-2-4 mix		Loss of strength from 1-2-4 mix	
				Cents per Cu. Yd.	Per Cent	Pounds per Sq. In.	Per Cent
1-3-6....	$4.44	$15.44	1950	.72	4.5	490	20
1-3-5....	4.57	15.57	2030	.59	3.6	410	17
1-2-5....	4.93	15.93	2200	.23	1.4	240	10
1-2-4....	5.16	16.16	2440	...	...	...	..

it. This table is based upon the average crushing strength of concrete as given by the best authorities on tests made when the concrete is thirty days old. It is based on the following prices for materials:

Cement, $1.90 per barrel net.
Sand, $1.35 per cubic yard.
Gravel, $1.80 per cubic yard.
All prices are for the materials delivered at the job.

In making up the total cost for the concrete, the carpenter labor, lumber, mixing and placing, and the reinforcing steel have been assumed at $11 per cubic yard, which is a very conservative assumption when the present price of steel is taken into consideration.

The first column of this table gives the mix of the concrete; the second the cost of materials required for one cubic yard of concrete; the third column gives the total cost per cubic yard of reinforced concrete in place, including carpenter labor, lumber, labor of mixing and placing the reinforcing steel. The next column gives the average crushing strength of concrete per square inch. The next two columns show the amount in cents per cubic yard and also the percentage saved using a 1:2:4 mix as a basis. The last two columns show the loss of strength in pounds and also the percentage of loss, using a 1:2:4 mix as a basis.

By studying this table it will be observed that the difference in cost between a 1:2:4 mix and a 1:2:5 mix is only 23c per cubic yard, or 1.4 per cent, while the loss in strength is 10 per cent; it will also be noticed that the amount saved between a 1:2:4 mix and a 1:3:6 mix is only 4½ per cent of the cost of the concrete work, while the loss of strength is 20 per cent.

If we take into consideration the total cost of the entire building and assume that the concrete work is one-fifth of the total cost of the entire building, which is the usual percentage, we note that by changing the mix from 1:2:4 to 1:2:5 we save only one-third of 1 per cent on the total cost of the building, while the strength is cut down 10 per cent; while if we change the mix from 1:2:4 to 1:3:6 we save less than 1 per cent on the total cost of the building, while the strength is cut down 20 per cent.

From this tabulation it is easily seen that it is poor economy to skin the mix of concrete; and the old saying that "The best reinforcement for concrete is cement" is fully verified.

* * *

Thirty-six Million Cords of Wood Waste Annually

THERE are more than 48,000 sawmills in the United States, and their output of waste in the form of sawdust, shavings, slabs and other wood refuse is estimated as 36 million cords per year. This is equal to over 4½ billion cubic feet of waste, which is the capacity of a bin one-half mile high with a base covering a forty-acre lot. Or, considering each cord to contain eighty cubic feet of solid wood with all the cracks and air spaces taken out, these 36 million cords would make a block of wood more than a quarter of a mile on each edge.

Perhaps one-half of this so-called waste product is not strictly speaking wasted, but serves a useful purpose as fuel under the boilers. Much of the remaining 18 million cords not only serves no useful purpose, but in most cases is a source of inconvenience and danger, and costs the mill time and money.

Sawmill waste is disposed of in various ways. Some goes to the local fuel market, some to pulp mills or to wood distillation plants. Shavings and log cuttings, as well as other mill waste, are sometimes used to fill low places in the yard. However, the most common method of getting rid of waste is by burning either in a fire-pit having an open fire which sometimes has a protecting wall on the side towards the mill, or in a burner enclosed on all sides and having a spark-arresting screen at the top and a fire grate near the bottom. In both cases some kind of a conveyor is necessary to bear the waste from the mill to the fire. This is usually a sort of trough with a metal bottom along which a slowly moving chain or cable, equipped with cleats or buckets, carries the waste to the fire.

Rebuilding the Foundations of a Portland, Oregon Packing House

By W. R. PHILLIPS, M. A. S. C. E.

THE packing house of the Union Beef Co., recently constructed on the south shore of Oregon Slough, Columbia River, North Portland, Ore., is a seven-story 122x166-foot building originally designed to have deep, concrete foundations supported on wooden piles. After the construction of the foundation serious settlement occurred before the completion of the building and the weight of the latter was transferred to entirely new foundations and the old ones were abandoned.

The wooden piles were driven to a depth of about 16 feet, the concrete foundations were built on them, in trenches which were backfilled with sand, after which settlement of the foundations and of the adjacent ground commenced and continued until the foundations were replaced by the new ones. An exploration of the ground indicated that a large amount of water below the bottom of the wooden piles permitted the upper stratum to be displaced and that it was necessary to carry the foundations down to cemented gravel about 116 feet below the surface of the ground.

New foundations were designed and constructed and the weight of the building was transferred to them. While this was in progress, the settlement continued in an irregular manner at a rate in some places of one-tenth foot per day and varied from nothing at one corner to 2 feet at the maximum. To compensate for this settlement the brick walls were cut free of the footing and jackscrews inserted and operated as required to lift the building as fast as the foundations settled. The adjustment of the jackscrews was followed up by blocking and wedging, but the blocking developed so much tendency to roll that it was displaced laterally and occasioned wide cracks in the brick wall that required considerable repairs. This difficulty was overcome when brick piers were substituted for the blocking.

The new foundations consisted of 153 concrete piers from 21 to 32 inches in diameter, and from 100 to 112 feet long, sunk to bearing on the cemented gravel. The piers supporting the wall were set in pairs on opposite sides of the wall, their tops were connected by reinforced concrete girders to which the weight of the wall was transferred, and similar piers were used for the support of the interior columns.

The piers, although referred to as concrete columns, were in reality steel sectional, cylindrical caissons sunk by jetting and loading and afterwards concreted in exactly the same manner as has been used where circumstances permitted for larger caissons, shaft linings, and the like, as, for instance, in several lake intakes for city water works, and in some cases of bridge piers and other heavy foundation work where caissons are sunk by interior dredging.

These caissons have double concentric steel shells connected by conical edges and having the annular space between the shells concreted before sinking. This left an open central shaft with a flaring bottom corresponding to the working chamber of a large caisson.

The shells were assembled and concreted up to a convenient height above the surface of the ground and a water jet with a horizontal nozzle at the bottom was inserted through the central opening and operated to scour out and undermine the caisson which sunk under its own weight, care being taken to maintain it in a vertical position by means of guys engaging

the upper end. Additional lengths of the steel shell were assembled with inside sleeves and the sinking continued as long as the weight of the caisson sufficed to overcome the resistance, usually to a depth of about fifty feet.

Sometimes the increasing friction could be overcome by closing the upper end of the central shaft so that the pressure of the hydraulic jet would force the water under the cutting edge and escaping upwards around the sides of the caissons would lubricate the latter and decrease the friction enough to permit the descent of the caissons. When this did not suffice, the caisson was loaded with pig iron or other ballast and the sinking was continued until the caissons penetrated the cemented gravel and were dug out and filled solid with concrete. Although difficulties were encountered in sinking the caissons, they were all satisfactorily overcome and it was believed that the process would have been feasible even if larger or deeper caissons had been required.

The interior caissons were sunk in the same manner as the exterior ones except that jacks reacting against the weight of the building were used instead of ballast for forcing down the caissons. Intermediate rows of caissons were sunk in line with the original column piers and connected by reinforced concrete girders to which the column loads were transferred. The erection of the superstructure was carried on simultaneously with the construction of the new foundation, all of the walls and columns being maintained independent of the settlement by jacks and wedges previously mentioned.

The 33x52-foot four-story tank house adjacent to the packing house was built on similar wooden pile foundations, which also settled. These were replaced by concrete piers as above described, but located entirely outside of the house, and after they were completed the house was moved laterally to position on them.

* * *

Life of a Steel Frame Building

WHAT is the life of a steel frame building? When these structures were first erected, a little more than a quarter of a century ago, many predicted that the steel would rust, and within ten or fifteen years the condition of the structure would become dangerous.

But there now are standing a number of buildings more than twenty-five years old, constructed on the steel frame principle, with the weight supported by the skeleton and the walls merely a shell.

These buildings are in good condition, practically as solid and substantial as when they were built. But recently the razing of the old Champlain building on the northwest corner of State and Madison streets, Chicago, according to Straus's Investors Magazine, gave the opportunity to examine the condition of the frame work and allow experts to draw the deduction that a properly constructed steel frame building will last for hundreds of years.

The Champlain building was constructed in 1893 on a lot 63 by 106 feet. The building was fifteen stories in height, with one shallow basement. It had structural steel framework, with joists five feet apart; flat tile arches and fireproofing of terra cotta brick and terra cotta curtain walls, and a so-called floating foundation—shallow spread footings on blue clay. The steel frame was painted with iron oxide paint, two coats.

When the building was torn down after standing for nearly a quarter of a century it was found that the steel was practically unaffected by rust,

the greatest corrosion visible under the microscope being .009 of an inch. Practically speaking, the steel was in as sound condition as when it was first put in place, and all signs indicated that the building was good for an indefinite period. The footings, steel I-beams—unpainted—imbedded in Portland cement, showed no corrosion whatever.

Holabird & Roche, the architects of the building, who conducted the examination when it was torn down, came to the following conclusions as a result of their investigation:

"The condition of this building seems to indicate that the exclusion of air and moisture is essential for the preservation of the steel and also of the paint. The appearance of the rust suggests that it may have been formed soon after the building was constructed, and that it has not been progressive. Even if the worst case of rusting has been progressive and should continue at the same rate, it would be more than a century before failure of the members would result.

"The present practice of incasing all structural steel in concrete, or plastering it with Portland cement mortar, separating the pipe shaft from the steel and of using greater care in covering terra cotta anchors, certainly safeguards the framework of the structure for a much longer period than the probable economic life of such buildings."

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Government Makes Paper from New Woods

THAT satisfactory wood pulp can be made from a number of heretofore little known woods is evidenced by a government publication just issued which contains seventy samples of paper manufactured by different processes, chiefly from woods heretofore practically unused for this purpose.

It is pointed out that the spruce forests of the country are threatened with exhaustion and that the cost of spruce pulpwood has steadily increased. If the price of news print paper is to be kept at a reasonable figure, say the experts, more efficient methods of converting spruce into pulp must be developed or cheaper woods substituted for it.

The bulletin goes on to say that the method of manufacturing ground-wood pulp has changed very little since its introduction into this country in 1867. It was with the idea of developing new methods and improving the old that tests were undertaken at the Forest Service laboratories at Wausau and Madison, Wisconsin. As a result, the relation of the different steps in the manufacturing process to each other has been definitely established and the merits of each treatment determined. The paper made from new woods was given a practical tryout by two large newspapers with satisfactory results.

The tests showed that eleven new woods give promise of being suitable for the production of news print paper, while a number of others will produce manila paper and boxboards. Most of these woods are confined to the West, while the ground-wood industry now obtains the bulk of its raw material from the East. It is thought that pulp-making plants must eventually move to points where they can obtain a plentiful supply of wood and an abundance of cheap water-power, two prime requisites in the business.

The experts say that because the national forests contain immense quantities of the suitable woods and abundant opportunities for power development, they will undoubtedly play an important part in the future of the wood-pulp industry.

Dwelling Houses — Common Faults in Their Construction

Appreciating "that not one private house in a thousand is constructed with any serious thought regarding the safe escape of the occupants in case of fire, although the annual loss of life due to dwelling house fires is appalling," the National Board of Fire Underwriters has issued a report entitled "Dwelling Houses: A Code of Suggestions for Construction and Fire Protection," the observance of which by architects and builders would go far toward reducing the heavy toll in life and property paid the fire fiend each year.

THE following statistics, furnished by the new Actuarial Bureau of the National Board of Fire Underwriters, are compiled from true insurance loss values furnished by the insurance companies which are members of it. This is the first time such exact data has ever been collected and the figures given are undoubtedly the most accurate information upon the subject thus far published.

The compilers believe the values given represent over 90 per cent of the total insurance losses. They do not by any means represent the actual loss to the property owners, for large values not covered by insurance are destroyed in every State annually. State fire marshals who have studied this subject, and who have some data upon which to base an opinion, estimate that the actual property loss would be an increase of 25 to 33 per cent upon the insurance loss.

Only thirty-eight States are included in the statistics given, these being the only ones available at this time—complete data for all States will be published later. It will be noted that many of the States given are those having a scattered population with probably a preponderance of frame construction and a minimum of public fire protection. These facts do not distort the results so far as the States themselves are concerned, but may lessen their value somewhat for forecasting general conclusions for all States.

The term "dwelling," as used in the statistics, includes tenements and apartments, except those which have portions of the buildings devoted to commercial purposes; those are classified elsewhere. In the majority of States reported, the proportion of the tenement class of residence buildings would be relatively small, so the figures given probably indicate fairly well the losses on ordinary dwellings. The figures cover both buildings and contents, and no distinction is made here between buildings protected by public fire service and those unprotected.

Total insurance fire loss from all causes on dwellings in thirty-eight States for the year 1915:

Brick dwellings and contents	$ 2,343,655
Frame dwellings and contents	22,310,524
Total	$24,654,179

These values are distributed among the different States as follows:

	Brick Dwellings.	*Frame Dwellings.*
Alabama	$11,218	$1,093,670
Arizona	13,651	84,116
Arkansas	9,199	681,418

	Brick Dwellings.	*Frame Dwellings.*
California	$17,189	$2,078,989
Colorado	55,418	200,183
Connecticut	72,888	456,590
Delaware	9,785	32,245
Florida	3,916	618,379
Georgia	12,387	1,093,178
Idaho	2,049	231,726
Illinois	591,487	2,022,666
Indiana	33,226	1,020,970
Iowa	22,303	683,501
Kansas	10,165	456,357
Kentucky	50,889	780,576
Maryland	177,924	303,063
Michigan	117,072	1,079,767
Minnesota	28,350	733,292
Mississippi	19,498	921,749
Missouri	487,370	1,280,755
Montana	1,834	181,280
Nebraska	7,666	275,687
Nevada	475	25,661
New Hampshire	4,377	347,650
New Mexico	10,597	61,708
North Carolina	5,934	416,100
North Dakota	1,104	135,255
Oklahoma	1,453	463,787
Oregon	1,664	411,584
Pennsylvania	388,402	1,526,567
Rhode Island	81,244	318,660
South Dakota	89	96,870
Tennessee	24,159	926,377
Utah	19,191	67,047
Vermont	1,633	92,484
Virginia	28,196	515,198
Wisconsin	18,658	568,990
Wyoming	995	26,429

The three leading known causes of fire in nearly every State were chimneys and flues, sparks on roofs, and gasoline or other petroleum products. While accidental causes occasionally reversed the order in which the hazards operated, or gave unusual prominence to a minor cause, the general facts are clear and in accord with previous conclusions. The necessity for special precautions to counteract these devastating influences is plainly indicated.

The wide variation in loss upon frame and brick buildings for every State recorded is significant. However, as the number of buildings involved in the figures is unknown, it is impossible to draw definite conclusions regarding the relative fire hazard of the two types of construction. Considering the States concerned, it is probable that the risks covered a considerable excess of frame buildings, and if so, would account in some degree for the disparity in losses; nevertheless the fact that there is extreme difference in favor of brick buildings in every State named is worthy of consideration.

As a general proposition the cost of a dwelling bears little relation to its fire-resisting ability. The effects of a fire are practically the same whether a house costs $3,000 or $300,000. The same defective construction exists in both, and unless the fire is controlled by outside agencies, the destruction is swift and complete. In recent years there have been a large number of very costly suburban and country houses burned in different parts of the country with an aggregate loss of many millions of dollars. It is a practical certainty that the owners of these buildings would have gladly incurred the additional expense necessary to have made them in some degree fire-resistive, if their architects had called attention to the simplicity of such precautions and the resulting decreased hazard. Ordinary business prudence should insure that such costly residences be made as fire-resistive as possible, particularly when remotely situated from public fire protection.

The proportion of dwellings which catch fire and are a total loss, or which have building and contents ruined, is very high. The reasons are plain. First, in cities such buildings are usually located in outer areas more or less remote from fire fighting apparatus. Many are situated outside of city limits, or in villages or suburban developments where fire protection appliances are meager and unreliable. Then there are vast numbers scattered all over the country which are entirely unprotected. Second, dwellings are generally small and low, so that a fire well started before discovery is likely to envelop all portions before outside assistance can become effective. Third, the majority of dwellings are of very combustible construction, with open stairways lined with varnished or painted woodwork connecting all stories, and with no provisions for arresting the spread of fire from floor to floor or from room to room. The cellar, where the heating appliance is usually located, often contains much combustible material, a combination which is dangerous. Moreover, the cellar is more or less directly connected by open channels with all parts of the house, including the garret. This results from lack of proper protection around water, gas and steam pipes, hot air pipes, dumb waiter shafts and open spaces through walls and partitions. Fourth, the nature of the occupancy is such that much of the time there are not enough able-bodied occupants present to do effective fire fighting from within.

These four conditions combined result in the enormous annual property fire loss, and the sacrifice of many lives. The lamentable feature of the situation is that a large part of this loss could be prevented by reasonable precautions in construction and careful observance of the ordinary rules of fire protection. The cost of the former would be comparatively small; the only expenditure for the latter would be a little thoughtful vigilance.

The cost of structural fire barriers necessary for reasonable protection to a dwelling house amounts to but a small percentage of the total cost of a building. For this reason it is hoped that architects and owners will adopt them once their attention is directed to the reduced hazard resulting from a little intelligent thought and care. Speculative builders who erect houses to sell, and build them as cheaply as possible with slight regard to utility, will perhaps be disinclined to adopt alterations which will add anything to the cost. However, even these should be convinced to the advantage gained as an advertising medium by the introduction of such structural safety features. It is reasonable to assume that a prospective home purchaser would be very favorably impressed with the idea of buying a house in which all precautions had been taken against the spread of fire.

Dwellings in this country consist essentially of four types as regards their method of construction.

Type I. Buildings fully protected, properly called "fireproof," in which all structural parts, including doors, windows and trim, are of incombustible construction. Some buildings which belong in this class have minor doors and windows of combustible construction, but where these do not serve as important cut-offs, or are not likely to be subject to serious fire exposure, their presence in the building would probably not materially increase the hazard.*

Type II. Buildings with partial protection; commonly (though improperly) called "fireproof." The term "semi-fireproof" would properly be applicable. Such buildings have walls, floors, roofs, and partitions of incombustible construction, but with wooden floor finish, wooden trim, and ordinary wooden doors and windows.

Buildings of this type usually have masonry walls with steel beams filled between with fireproof material for floor and roof construction, and partitions of terra cotta, gypsum, metal lath and plaster or other equivalent material; or they are of reinforced concrete construction throughout; or any other combination of the foregoing materials. Some moderate priced dwellings of this type have recently been erected with a light steel framework covered with metal lath with stucco and plaster finish on walls and partitions, and having concrete floors.

Type III. Buildings with walls of incombustible construction, but having all interior construction, including the roof, of wood. The roof covering being either wooden shingles, or some type of fire-resistive material. The walls of such buildings are either stone, brick, concrete or terra cotta. Usually generous wooden piazzas are attached.

Type IV. Buildings constructed entirely of wood, either with or without fire-resistive roof covering. Sometimes the walls are veneered with brick, or covered with stucco.

Except for precautions against open stairways, or other passageways through a house, very few of the recommendations of this pamphlet apply well to dwellings of Type I. Such buildings are in a sense ideal; and although an increasing number is being erected each year, the total is still very small.

The same is essentially true in reference to buildings of Type II. They are not subject to spread of fire through concealed spaces, which is the worst constructional defect in dwellings; nevertheless, they are liable to destruction due to fire communicating from one portion of the house to another through open stairways, aided by the free use of wooden trim, door, and windows. Many houses of this type have been built in late years, some being costly and others medium priced buildings erected in groups for workingmen's houses in connection with industrial plants. Unfortunately their occupants are taught to have a feeling of security which often does not really exist. Experience has shown that because of faulty design, even expensive structures of this class frequently suffer a complete burn-out from an interior fire when outside aid is not promptly rendered.

With a little thoughtful care in the design of such buildings, and the exercise of prudence in selecting materials for trim, particularly where

* All varieties of interior trim are now made of sheet steel, and so beautifully finished they are difficult to distinguish from handsome wooden trim. Metal trim costs more than wood, and requires a skilled artisan to install it, but *it will not burn*, and this is a compensating advantage that should be seriously considered by those who can afford to buy it. Wooden trim treated by some process to render it fire-resistive would be entirely suitable for use in a house where the owner desired an incombustible trim but wished to preserve the artistic effect of wood color and grain. There are companies which make a commercial business of treating lumber for such purpose.

they are used in the planes of fire barriers, this class of residences can be made exceedingly safe. There are several methods of constructing noncombustible dwellings of this type which cost but little more than a frame building.

There is a prevailing belief that incombustible dwellings are impracticable because of excessive cost; as a matter of fact this opinion is not justified, for numerous dwellings of this class are being erected in different parts of the country at costs not exceeding 10 to 15 per cent over that of first-class combustible construction. Reputable contractors claim that in some localities the difference in cost is even less than this. If properly designed, such buildings not only furnish complete safety to the occupants, but reduce to a minimum the danger of a complete burn-out from an interior fire, and greatly lessen the hazard of ignition from burning of neighboring buildings. They are also rat and mouse proof, as well as having increased sanitary advantages.

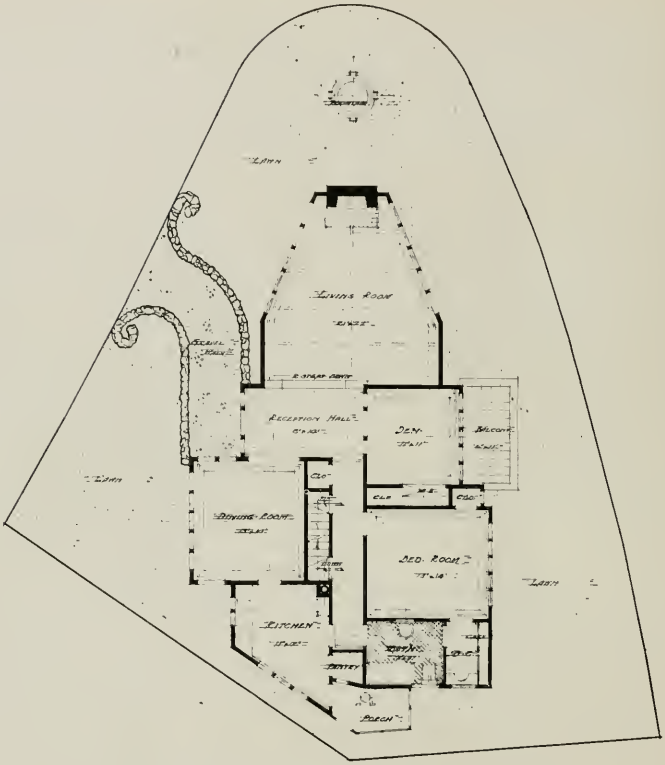
As regards the last two types of dwellings there is little to be said in defense of their fire-resisting properties. Their weakness is well recognized. So far as the exterior fire hazard is concerned, Type III—that is, buildings with incombustible walls—has a marked advantage. When an interior fire occurs, the chances of a complete burn-out in either type are more nearly even.

It should be borne in mind that many of the fire prevention measures recommended can be put into a house at the time it is built with practically no extra expense, if specified in the plans before being submitted to contractors for bids.

* * *

Oak Floors Cheaper Than Carpets

THAT oak flooring combines quality, distinctiveness and durability in the highest degree is acknowledged by all, and, despite the fact that it has been associated with extravagance, facts undeniably establish its economy. Few realize that oak flooring is vastly cheaper than carpet, but it is true. Carpet prices on the Pacific Coast range from $1.10 per yard up to as high as you care to pay, but for the sake of comparison let us take the medium grade at about $1.75 per yard. Good carpet cannot be bought for less. As carpet runs generally 27 inches wide, this price would represent approximately 26c per square foot. To this must be added a good grade of pine flooring, which is about $50 per 1,000, laid, or 5c per square foot, bringing the cost of carpet up to 31c per square foot. The finest quality of plain oak flooring, laid and finished, costs less than 20c per square foot. Taking it conversely, a yard of carpet 27 inches wide costs $1.75, in addition to the under flooring. It may cost as high as $6. A yard of oak flooring 27 inches wide costs $1.35. The difference between a yard of hardwood and a yard of carpet is therefore from 40c to $4.65, plus the cost of the pine flooring. This difference in the entire yardage of the floor will more than pay for the rugs which one may desire. It is therefore seen that hardwood floors are cheaper than carpets on the original cost and they do not have to be replaced after a matter of five years or so, as is the case with carpets. A hardwood floor properly laid will last a lifetime and will prove a constant source of satisfaction, besides being both sanitary and elegant. It adds to the rental and selling value of the house and attracts a better class of tenants.



PLAN, RESIDENCE FOR MR. J. S. MALLOCH, FOREST HILL.
Heiman & Schwartz, Architects

Some Recent Work of Messrs. Heiman & Schwartz

SOME of the more recent work of Messrs. Heiman & Schwartz, architects of San Francisco, is shown in this number. The firm has been doing some very creditable designing, covering a wide range of construction. The residence of Mr. J. S. Malloch in Forest Hill is unique in many respects. The simple lines, imitation thatched roof, plaster exterior and background of tall trees all contribute to that restful atmosphere which should characterize the ideal country home. A feature of the house is the living room—a fine example of Old English architecture. An apartment house of rather pleasing treatment is also shown, as well as four buildings containing two flats each on Fourteenth avenue—a type of construction popular with investors, as it brings good returns on a comparatively small outlay. The apartment or residence flats are for Mr. M. Spiro and were built for approximately $18,000.

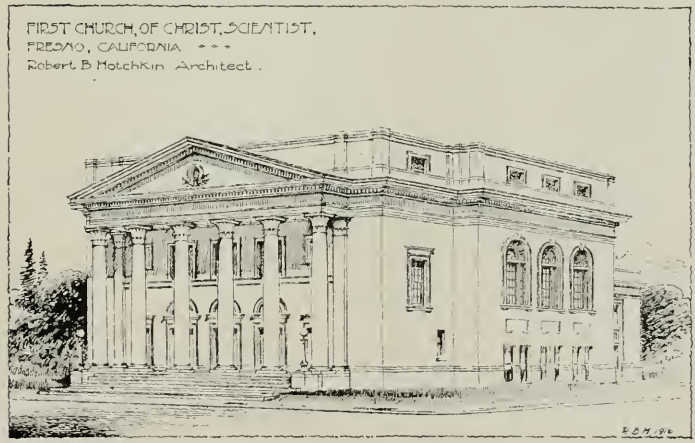
RESIDENCE, FOREST HILL, SAN FRANCISCO
Heiman & Schwartz, Architects
J. S. Malloch, Owner and Builder

RESIDENCE FLATS FOR MR. M. SPIRO, SAN FRANCISCO
Heiman & Schwartz, Architects
J. S. Malloch, Builder

APARTMENT HOUSE FOR MR. A. BIRKER
SAN FRANCISCO
Heiman & Schwartz, Architects

FLATS FOR LOUIS FRIEDMAN, SAN FRANCISCO
Heiman & Schwartz, Architects

RESIDENCE FOR J. J. BAUMGARTNER
Louis M. Upton, Architect



FIRST CHURCH OF CHRIST SCIENTIST, FRESNO
Robert B. Hotchkin, Architect

The Importance of Waterproofing*

By LOUIS G. MAUER.

THE laws ruling the forces of nature are strange and difficult. To control them it is necessary to understand cause and effect. Though they may seem simple, they oftentimes are difficult to conquer, but, once this is accomplished, they may be made our servants.

The force of which I wish to say a few words is one with which, possibly, only a few of you are familiar, although many of you have been more or less worried and annoyed by the action of this force. Possibly you have been required to spend many dollars, endeavoring to control and overcome the damaging effects caused by this force when given an opportunity to find its affinity, an element of nature, in working order, not as a producing factor, but one of destruction. This element of nature is—water.

The cause and effect of this force (it may even be named one of the mysterious forces of nature) can be given much thought, careful study and a comprehensive analysis. By so doing, you will find many interesting problems. To understand how to control and use this force may be of more or less value and aid to many of you in overcoming difficulties in some branch of your particular line of business.

This is: The force of absorption, known as capillary attraction. Even a law of nature, gravity, under certain conditions, must give way to this superior power.

This subject, absorption, a force of nature, and water, an element of nature, their relationship, cause and effect, is a broad and comprehensive one and will permit of long discussions with many practical and interesting demonstrations to prove the vast influence, nearly always destructive, upon every material or substance where absorption exists, and where coming in contact with water.

As an illustration, you often hear the expression "poor and porous stone," "brick," "concrete," or "plaster."

Naturally you assume that this is the sole cause of "basements leaking," and the "walls of buildings leaking" above ground.

This is a minor cause of leaks in buildings.

The absorptive nature of the material itself is the predominating cause when subjected to and coming in contact with water.

The effect is caused by capillary attraction drawing the water in all directions through the absorptive materials. This will steadily and gradually draw water through the heaviest concrete and brick walls.

When once they are saturated, this acts as a conduit for free percolation, and the results are leaks and damages.

A most forceful example of the far-reaching effects of disintegration can be seen on the beautiful stone work of the Palace Hotel, Mechanics Library and other San Francisco buildings. You may then compare them with the Masonic Temple, German House and A. B. Spreckels residence, which buildings were treated with a preservative by the McGilvray Stone Company, or all buildings of the German Savings and Loan Society's branches, which were treated by the Colusa Sandstone Company. All these buildings are constructed with the same kind of stone.

*A short talk before the San Francisco Rotary Club.

Frank Dempster Sherman

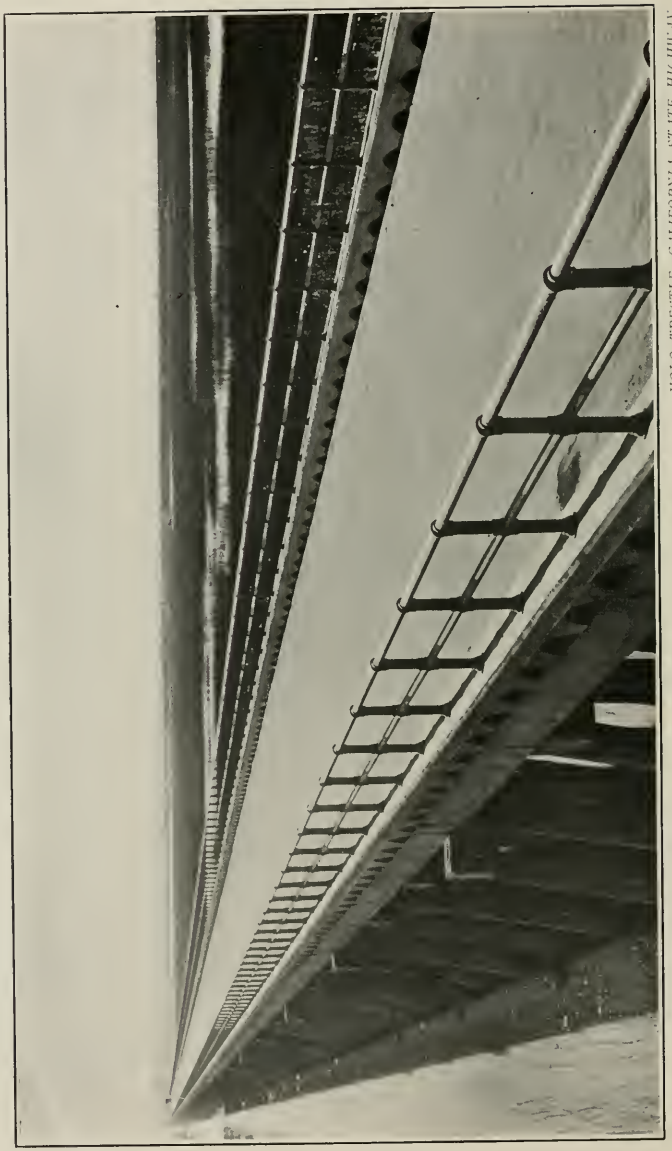
PROFESSOR Frank Dempster Sherman, head of the department of graphics in the School of Architecture at Columbia University, died in New York on September 19th after an operation for appendicitis. Any adequate appreciation would be out of the question at this time, but to all those who have had the privilege of knowing and studying under Professor Sherman his death must come as a very personal bereavement. Called back to Columbia by Professor Ware in the earlier days—in 1887—he became one of the splendid trio—Ware, Hamlin and Sherman—that carried the School of Architecture through its most glorious years. Of the work of these three, his courses were without doubt the least interesting, from our prematurely professional point of view. They were just plain, hard work in pure mathematics, descriptive geometry and the like, followed by the "orders" with their shades and shadows. Under his touch, however, everything became important and helpful, nothing was mere drudgery. There was a considerable achievement in this. For the man who could transmute or at least relieve the ungrateful preliminary tasks and vitalize even the calculus to anxious students of architecture, was by no means an ordinary teacher. In the classroom he was exceedingly rigorous and exacting (as became his subjects), but unalterably generous and fair, and with riper acquaintance we invariably came to "place" him where he belonged, as pupils inexorably will, to prize and lean upon his friendship and to revere his innate nobility and gentleness.

Part of the secret of his success, no doubt, lay in his remarkable versatility. A most able and original mathematician, he was the author of several volumes of lyrics, co-author with John Kendrick Bangs and Clinton Scollard in some lighter ventures, and used to publish exquisite and polished sonnets, occasionally, in the Century Magazine. Once he tried to illustrate to my class a transference of co-ordinate axes (or something like that) by reference to a certain modulation of musical keys, scientific harmony happening to be at that time one of his favorite recreations. Doubtless he has had many other pastimes equally abstruse and playful. But above all, he brought about everything that was best of his varied and stimulating personality into the classroom and gave us freely of himself.

Professor Sherman was still in the prime of his academic life—he was only fifty-six—but for many years he had thus splendidly borne the brunt of the mathematical and graphical teaching of the school, specializing it to the study of architecture after the self-containing policy which has been pursued successfully there for so many years. Consequently—at least at this distance—the void he has left seems almost impossible to fill. Some of us could go, and the ranks would hardly need be closed up, while others leave a gap which a host of rare qualities and abilities can hardly repair, and can never really take their places. And if, with all his quiet modesty, the service of this man to Columbia's School of Architecture is gauged by this standard of replacement, his untimely passing will have proved a loss indeed.

CHARLES SUMNER KAISER,
Mechanics Institute Building, San Francisco.

October 10, 1916.



YOLO TRESTLE, CALIFORNIA STATE HIGHWAY
AUSTIN B. FLETCHER, CHIEF ENGINEER

The Yolo Basin Concrete Trestle

THE Yolo Basin trestle, built by the California State Highway Commission, is considered one of the most expensive undertakings the State Highway Commission has carried out since it commenced the construction of new roads throughout California. For forty years the people of Sacramento Valley had been dreaming of the day when the basin would be permanently bridged, and at last the dream has come true.

The so-called Yolo Basin is flooded annually for six or eight months, and is a part of the great marshy district extending from a point some fifteen miles north of Marysville to Rio Vista, a distance of more than 120 miles. The flooded territory is as wide as three miles in places.

South of the bridge at Meridian, which lies due west of Marysville, there has been no way of crossing the overflowed area in vehicles during the flood periods; and the east and west sides of the great Sacramento Valley have had no means of intercommunication by highway at such times.

For a few months during summer and fall, when the flood waters from the Sacramento have subsided and the marsh lands have dried out somewhat, a precariously passable road, known as the "Tule Jake" road, was the only means of crossing the basin.

It is unnecessary to say that "Tule Jake's" road was usually a concatenation of ruts and chuck-holes.

The building of this trestle of concrete was in pursuance of the policy of the California Highway Commission to construct the State highway system in a durable manner, and choose routes that would most directly and strategically connect the centers of population, regardless of engineering difficulties and false theories of economy in first cost.

The design of this trestle was worked out by the engineering forces in the Commission's office in Sacramento.

The westerly 2,000 feet of the trestle is of timber construction for the reason that some day a levee to define the westerly margin of the Yolo Bypass is to be built. Thereafter an earth fill may be substituted for the wooden trestle.

Including this wooden portion, the entire trestle is over three miles in length, and is reported, as stated, to be the longest trestle in the world. Its average height is twenty feet and it provides a clear driveway of twenty-one feet in width.

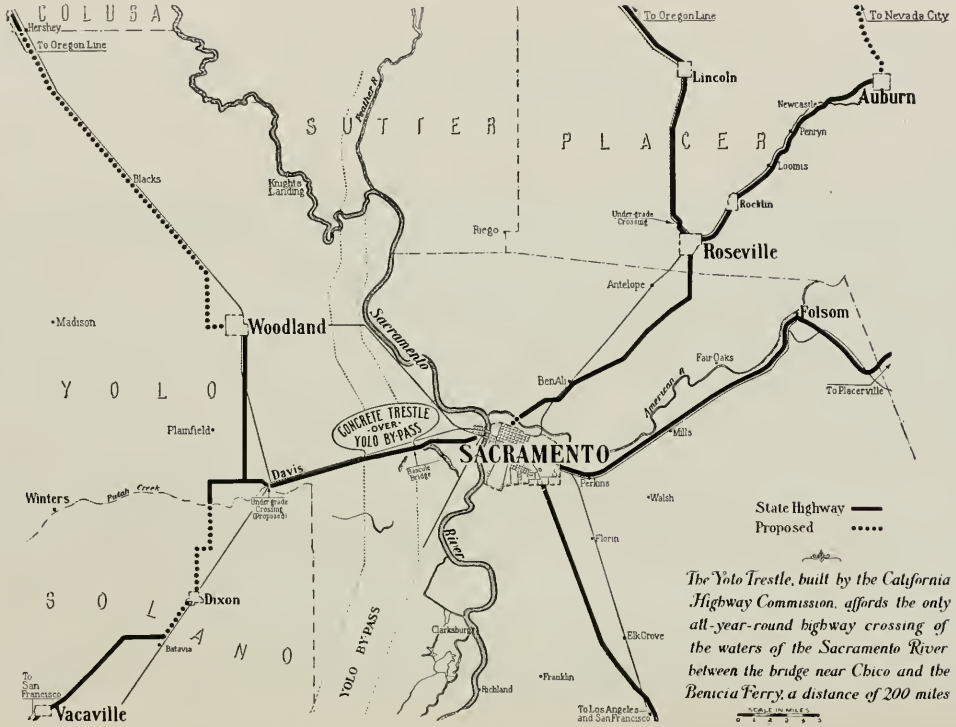
The contract for the work was let July 31, 1914. Driving the wooden piles on the west end began November 1st of that year, and the first concrete pile was driven on January 3, 1915, and the last on October 1, 1915.

On Saturday, March 18, 1916, the general public was given the first and long-looked-for opportunity to use the trestle; and on the following day over 2,000 automobiles, conveying 8,000 people, traveled over it.

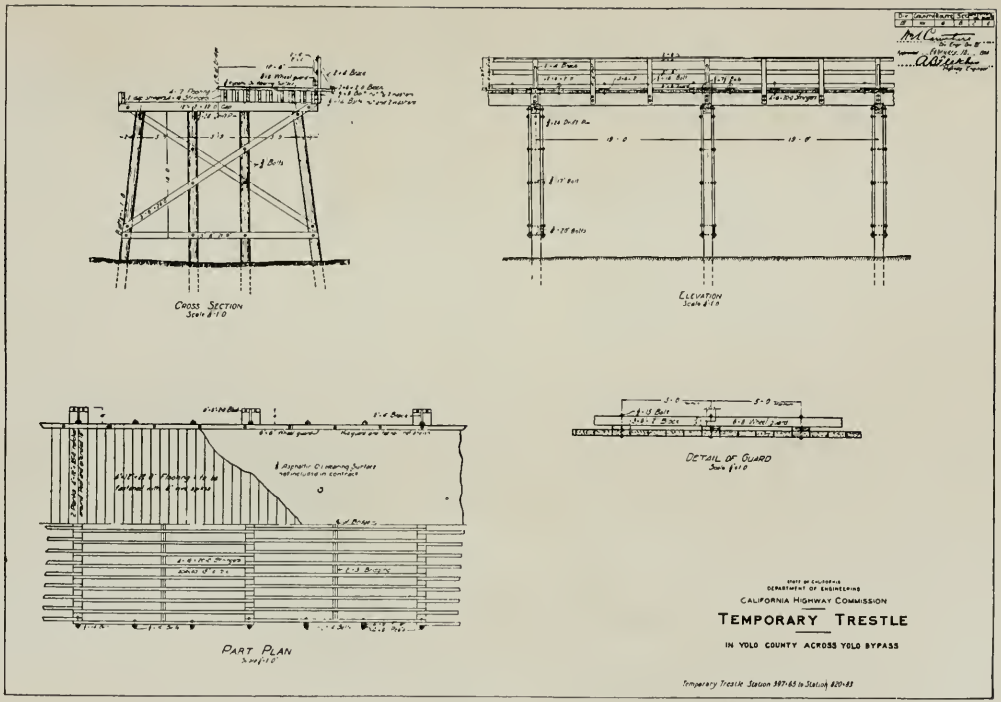
Nearly 1,100 carloads of material were used in the construction of this great bridge, including 21,692 tons of crushed stone, 12,553 tons of sand, 32,000 barrels of cement and 2,200 tons of reinforcing steel. These materials, which cost $148,000, were supplied by the Commission under its special half-rate freight schedule agreement with the railroad company.

The contractors, the Graff Construction Company of Seattle, received $246,000 under their contract. The total cost of the trestle was therefore a little under $400,000.

The trestle, as shown by the accompanying illustration, is a structure resting upon reinforced concrete piles from 32 to 50 feet long, driven in



The Yolo Trestle, built by the California Highway Commission, affords the only all-year-round highway crossing of the waters of the Sacramento River between the bridge near Chico and the Benicia Ferry, a distance of 200 miles



SECTION AND ELEVATION, YOLO TRESTLE
AUSTIN B. FLETCHER, CHIEF ENGINEER

groups of four abreast, called "bents," to an average depth of 20 feet. These piles are 14 inches square, the lower five feet being tapered to facilitate driving. They weigh from three to five and one-half tons each, according to length.

They were conveyed from the casting grounds to position by a narrow gauge railroad, especially built by the contractors for the purpose. The piles were cast with the ends of the heavy steel reinforcing bars projecting two feet from their tops. The two inside piles of each "bent" were driven vertical, the outside piles were sent down at a slant, giving the structure a widened and a braced foundation.

Each group of four piles is capped and bound together by a concrete cap. This cap is reinforced by heavy steel rods, and is cast in place, forming a solid monolithic member, with the projecting ends of the steel reinforcing bars of the piles embedded and anchored into the cap when cast.

Spanning the twenty feet from "bent" to "bent," the reinforced concrete floor slabs were placed directly upon the caps. These slabs weigh about six tons each. They are formed like a huge inverted box with side and end walls eighteen inches high and top six inches thick. Five of these slabs, side by side, bound by reinforcing steel and cement to the caps, form a practically solid stone structure three miles in length.

This trestle, together with the connecting roadways, reduces the distance from Sacramento to San Francisco by automobile to 98 miles, a saving of 30 miles via Stockton and Altamont.

*
* *

Stucco and Concrete

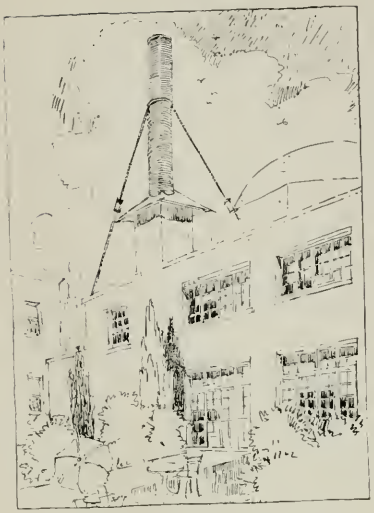
STUCCO over frame has added a valuable and attractive building construction which has the advantage of adapting itself readily to methods already well understood by workmen in every locality.

A danger lies in the use of stucco from the fact that the public, having taken kindly to this material, is often apt to overestimate its value. The man in the street refers to so and so's "concrete house," which is in reality entitled to no claim on the word concrete, for it is a typical frame structure designed perhaps along lines that give it, when plastered, the appearance of massiveness associated with masonry.

It is to be regretted that the owner too often considers this type of house as having superior fire resisting qualities. True, a stucco covering will present considerable resistance to fire from exterior sources, but as the greater number of fires originate within the house the stucco exterior must not be too highly regarded when placed on frame. In this particular it is comparable to brick veneer—a great improvement truly on the wood exterior—but not to be considered in the class of the masonry structure. At this time builders will do well to realize that non-burning walls of brick, tile or concrete add little to the cost of a house and fireproof concrete floors are within the reach of the builder of a home of average cost.

The great drawback is not the high cost of fire resisting construction, except as that cost depends upon ignorance of the more modern construction and in the lack of disposition on the part of designers and builders to change methods. That the home building public is ready to take advantage of better construction is evident to anyone who has constructed a well-designed fireproof residence.—Concrete.

Beautifying a Smokestack



ARCHITECT'S ORIGINAL SKETCH FOR CICARDI'S RESTAURANT

CICARDI'S Garden Restaurant is considered the most beautiful place of its kind in the country. Many people who have traveled extensively in nearly all countries of the civilized world say they have not seen any building used for the same purpose that could equal Cicardi's. It is one of the show places of St. Louis, and it is as unpardonable to visit St. Louis without visiting Cicardi's as it was in the old days to visit St. Louis without visiting Tony Faust's. Cicardi's has always been where it is now, but the recent building, plans for which were made by Architect T. P. Barnett and erected under his supervision, has considerably enhanced its reputation and increased its popularity.

The building itself is strikingly attractive, and Mr. Barnett has spared no effort to introduce novel features which have won for it the reputation it enjoys and to which it is justly entitled, says a writer in the Ideal Heating Journal. The new main building was built without tearing down the old building, which was a one-story red brick building. The

CICARDI'S GARDEN RESTAURANT, SHOWING EFFECTIVE ARCHITECTURAL TREATMENT IN FINAL PLAN

contrast was so great that it was decided that the old building must be improved as soon as possible to harmonize with the new. It is worthy of note that the architect not only made the old building harmonize so well with the new that anyone who did not know would insist that both were built at the same time, but also he added an additional story without interfering with the business for a minute. The beauty of the building is not confined to the exterior. The interior of the dome is constructed to resemble a beautiful starlit sky. When the main lights are dimmed the effect is wonderful beyond description, and the applause which follows is a splendid tribute to the architect's efforts.

There was one thing that caused the architect much worry and that was that one view of this magnificent building was spoiled by a not very beautiful but necessary smokestack. He realized that in order to get the best results from the boiler, the smokestack must exist, and that it must necessarily be of a size that would to some extent interfere with the appearance of the building. Mr. Barnett overcame the difficulty in a very ingenious way. He built around the stack with the same material as the rest of the building, and thereby turned what was considered a necessary evil into an adornment.

* * *

The Return of Bidder's Checks

CRITICISM has been aroused on two occasions recently in the West because certified checks were returned to low bidders who failed to enter into contracts. The reason given in each case was that errors had been made in preparing the bids. That such criticism is justified this journal feels sure the great majority of responsible contractors will agree. Individual cases are apt to arouse one's sympathy, and it is unquestionable that even the best contractors make mistakes in their computations sometimes. As against these there are a very large number of irresponsible or actually dishonorable individuals who place bids merely as a feeler, to find out from others better informed what a job is worth, or how prices are going, figuring on getting their checks back on some technicality or other, even if they have to go to court to do it. Then, too, there is the ignoramus who prepares his bid from the tabulations of previous lettings of somewhat similar work, only to discover that he is all wrong on the particular job for which he is bidding.

It costs a responsible contractor an appreciable sum of money to prepare a bid for a work of average magnitude. To be sure of what he is bidding on he must make a trip over the site of the proposed work and do some very careful figuring. If an irresponsible bidder happens to confuse the whole thing, his expense has been for nothing. Also, he is placed at a disadvantage at the second letting. In preparing his first bid he figured the job would cost so much and he allowed himself a certain profit. In preparing his second bid he knows his competitors are aware of what he thinks the job is worth. To throw them off the track he must either cut into his profits or do some skillful unbalancing. The latter subterfuge being prohibited in most work nowadays, the only course left open is to be satisfied with a lower profit and a smaller allowance for contingencies. The job was spoiled for him at the first letting.

If there were no penalty attached to a failure to enter into a contract by the lowest bidder or if, in general, such a penalty should become merely a figure of speech and not be exacted, the profits of contracting would soon be a matter of history. Lettings would become mere auctioneering and no contractor could expect to survive.—Engineering Record.

California State Building Competition

THE publication of the program for the State Building competition has brought out some interesting inquiries, of which the following are samples:

September 15, 1916.

Mr. George B. McDougall, State Architect,
Sacramento, Cal.

Dear Sir: Referring to paragraph seven (7) of the "Program of Competition," for the State Building to be erected at San Francisco, I wish to ask the following question:

Does this mean that a competitor may associate with him an architect residing in another State?

Awaiting reply at your early convenience, I am,

Very truly yours,
R/H A. F. ROSENHEIM.

* * *

Sacramento, Cal., September 22, 1916.

Mr. A. F. Rosenheim,
H. W. Hellman Building,
Los Angeles, California.

Dear Sir: Answering your inquiry regarding Section No. 7 of the Program for the San Francisco State Building competition:

This Section No. 7 does not furnish the answer for your inquiry. The "Competition Announcement," also the two paragraphs under caption "Concerning the Nature of the Competition," make it clear that the competition is confined to "certificated architects of the State of California who have had the necessary experience." Therefore, an associate architect, or the members of a firm of associated architects, as provided for in Section No. 7, must be certificated to practice in California.

Yours very truly,
(Signed) GEO. B. MCDOUGALL,
GBMcD:K State Architect.

Another inquiry of considerable interest came from a San Francisco architect, who asked:

In regard to the Program for the San Francisco State Building competition, may I be permitted to make the following inquiries:

In paragraph 27, under the head "Credentials," reference is made to a statement setting forth the competitor's experience and a list of the work executed by him. If the competitor has gained his education in the best schools in this country and abroad, but has, as yet, been in active practice for only four or five years and done no monumental work, is he likely to be excluded from the competition?

When are the architectural members of the jury to be settled upon? If they have already been chosen, when will their names be announced?

In answer to the first inquiry, Mr. McDougall wrote:

The fact that a competitor has done no monumental work will not be considered as having any bearing upon the requirements of paragraph (C) in Section No. 27.

The answer to the second inquiry was:

The architectural members of the jury have not yet been chosen; it has not been determined when they will be. The selections, of course, must be made not later than November 15, 1916, the date set for the submission of the material required in the first stage of the competition.

* * *

Facetious

It is announced that in a new building to be erected in this city in which there are to be bachelor quarters a dumb waiter is to be installed. It would be well, too, if she was also deaf and blind.—The Sapulpa (Okla.) Herald.

THE
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Founded in 1905 by E. M. C. WHITNEY

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Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION

(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. XLVII. OCT., 1916 No. 1

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ANENT THE STATE BUILDING COMPETITION

One of the provisions of the program for the competition for plans for a State Building to be erected in the San Francisco Civic Center is that a candidate, to be eligible, must show blue prints and actual working drawings, together with a photograph of a completed building that he designed and supervised the construction of. The provision called forth the following inquiry from Mr. B. S. Hirschfeld, formerly with Messrs. Bakewell & Brown, and now a practicing architect in San Francisco:

September 13, 1916.

Subject: San Francisco State Building Competition, with reference to first stage.

State Architect,
Forum Building,
Sacramento, Cal.

Dear Sir: Paragraph 27, referring to (C) and (D): If the competitor is a member of the American Institute of Architects and has worked for other firms, he could not furnish these credentials. In such a case would the competitor be cast aside?

Yours truly,

BENJ. S. HIRSCHFELD.

Sacramento, Cal., September 18, 1916.

Benj. S. Hirschfeld, Architect,
251 *Kearny Street,*
San Francisco, Cal.

Dear Sir: Answering inquiry regarding the first stage of the San Francisco State Building competition, contained in your letter of the 13th inst.:

Membership in the American Institute of Architects has no bearing upon admission to the competition.

If an architect, although certificated to practice in the State of California, has never, in independent practice, on his own account, or as one of the members of a firm of architects, designed and supervised the construction of a building, he is not in a position to comply with the requirements of paragraphs (C) and (D) under Section No. 27, and since these requirements are mandatory he is not eligible to enter the competition.

Yours very truly,

(Signed) GEO. B. MCDOUGALL,
State Architect.

As a whole the program has been very favorably received, although some think that members of the pro-

fession should be in the majority instead of in the minority on the jury and that the selection of judges should be made from architects outside the State, inasmuch as many of the most capable ones within the State are themselves competing for the prize.

EAST COAST VERSUS PACIFIC COAST HARDWOODS

The use of hardwood needs no urging with the up-to-date architect. With the present moderate prices of hardwoods there is no good reason, even on the plea of economy, for using soft woods. Unfortunately, however, the hardwood consumption is made to suffer by the lack of knowledge of the various kinds of wood on the part of the specification writer.

Some architects fail to recognize that the West coast hardwoods, by reason of superior sawing and better qualities, are infinitely superior to the East coast products. To begin with, the woods are grown in identically the same latitude, being shipped either to the East or West coast as may be most convenient. When they arrive, however, some decided differences occur. For example, the veneered woods are shaved in the East but sawed in the West. The result in the Western method is conducive to better effects and wear. In the case of mahogany, the run of the logs is used in the West for lumber, while in the East the figured mahogany logs are separated from the others and not so used. A curious fact is that Eastern mahogany is quoted at from 22c to 24c per foot, while Western product is quoted at 19c to 20c. As a matter of fact, the West coast mahogany (being much of it figured) should be worth 10c per foot more than the East, instead of 3c to 4c less.

All things being equal, Pacific Coast products should have the preference, but where the home product is so greatly superior it is gross ignorance—or worse—for the Eastern hardwoods to be either preferred or accepted.

STRUCTURAL ENGINEERS WORK FOR ARCHITECTS

A few months ago the editor received a visit from an Australian engineer in America to study building construction. "I am calling on Chicago structural engineers, or more properly, Chicago architects," he said. "I find that all your structural engineers work for architects." Now the structural engineers of Chicago do not all work for architects, but enough of them are so employed to excuse the conclusion by a visiting stranger that the practice is universal. And in this respect Chicago practice fairly represents practice in the United States. Actually as well as in the opinion of the public, the architect is the principal in building construction and the engineer is the subordinate. And it counts little to the benefit of engineering that its practitioners themselves know that modern building construction and design are essentially engineers' work.

Let us illustrate again. Two days before this writing the editor was conversing with a friend—a physician of broad intelligence. Said the physician, pointing to a new tall building: "That is a marvelous structure. It is just as much a great piece of engineering as is Brooklyn Bridge." "Very true," said the editor, "who was the engineer?" The answer was: "I haven't the slightest notion. Smith-Williams was the architect. I suppose the engineer was one of his men." The editor knows who Smith-Williams' engineer is, for it is a part of his duty to know such things. So do many Chicago architects and engineers and building contractors know this man and esteem his professional work; it is their business to know. But how many, whose occupation does not make this knowledge essential, have it? The editor's physician friend did not, yet he did know that Smith-Williams was the architect. And there are many others no more concerned personally who have learned the architect's name and remember it. And moreover, if any of these men happen in the future to require a building to be designed and constructed, he will think of Smith-Williams.

We therefore repeat: It counts little to the benefit of engineering that its practitioners know that modern building construction and design are essentially the tasks of the structural engineer. To count much this knowledge must be had by the merchant, the financier, the physician, the lawyer as he now has knowledge of the architect. These men must know the engineer as the principal, not as one of the architect's employes, and if they are to know the engineer in this way engineers must take concerted action to force the knowl-

edge on them. The position of the architect is fortified by precedent, but this is not the whole reason why he maintains it so firmly. He has organized his profession for concerted action to a degree of strength nowhere approached by organizations of engineers. To combat organized architects, structural engineers must organize. They must organize as structural engineers.—Engineering and Contracting.

A rather sensitive subject, we think. The opinion of the Chicago editor that the time has come for the structural engineers of the country to organize and compete with the architect is questionable. As already stated, this is an extremely delicate subject. The architect belongs to a profession that is supposed to embrace certain defined branches of construction work. The engineer, too, has his specific duties to perform. An architect is not necessarily an engineer, any more than an engineer is an architect. There is ample field for both. If it is the idea of the editor of Engineering and Contracting to have the engineer design a building architecturally as well as structurally, then we would better advocate an engineering course for every architect, and the ultimate end would be a merging of the two professions with the undignified titles of "architectural engineer" or "engineering architect." Personally we think the two professions should remain independent. There is plenty of dignified work for both.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

University of Arizona Announces Architectural Competition

The University of Arizona announces another architectural competition, this time to secure plans for a building for the College of Mines and Engineering, for which there is $150,000 available. Plans are to be submitted by noon of December 15, according to the following official announcement:

The Board of Regents of the University of Arizona, in accordance with the provisions of the laws of Arizona, hereby advertises for plans and specifications in detail for a College of Mines and Engineering Building, to be erected upon the grounds of the University of Arizona, near the city of Tucson, county of Pima, state of Arizona.

The amount authorized to be expended for the erection of said structure, including architect's premium and the fee for superintendence of construction is the sum of $150,000. The premium which is to be awarded to the architect whose plans and specifications for said building may be adopted is 3 per cent of the total amount appropriated for the purpose aforesaid, and the fee for superintending the construction of said building is 2 per cent of the total amount so appropriated.

The architect whose plans and specifications may be adopted, before any premium shall be awarded therefor, must execute and file with the said Board of Regents a good and sufficient bond with an approved surety company as such, in the penal sum of Five Thousand Dollars ($5,000.00), said bond to be approved by said Board of Regents, conditioned that within sixty days from the date of said bond the said architect will, on presentment to him, enter into a contract containing such conditions and provisions as may be required by the said Board of Regents, and also that he will give such further bond to secure him in the faithful performance of such contract with such sureties as may be required of him, in the event that said Board of Regents should within sixty days require said architect to enter into such contract to erect said structure at the price aforesaid.

The preliminary plans and specifications in detail for such building must be submitted to the said Board of Regents at the office of the President of the University of Arizona upon the grounds of said University by 12 o'clock M. of the fifteenth day of December, 1916.

The said Board of Regents reserves the right to reject any or all of the plans and specifications which may be submitted according to the program of the competition, and also reserves the right to make its own provision for the superintendence of the erection of said building.

The program of the competition, including general specifications for said building, information relating thereto, blue prints of suggested floor plans, a map of the University grounds, and pictures of several of the University buildings, may be secured on application to Dr. R. B. von Klein-Smid, President of the University of Arizona, at his office upon the grounds of said University.

Board of Regents of the University of Arizona.

(Signed)

By William Jennings Bryan, Jr.

Dated Tucson, Arizona, September 25, 1916.

New Partnership

Charles Peter Weeks, architect, and W. P. Day, consulting engineer, announce the new firm of Weeks & Day, for the practice of architecture and engineering, with offices located at No. 933 Phelan building, 760 Market street, San Francisco.

Mr. Weeks will conduct the architectural department, transferring his offices from the Mutual Savings Bank building.

Engineering design and construction will be under the direction of Mr. Day, lately succeeded to the good will of the firm of Leonard & Day, consulting engineers, now dissolved, transferring his offices from the Rialto building.

Branch Carnegie Library

Preliminary plans have been approved and working drawings are being made for a one-story Class "C" branch Carnegie library at Green and Octavia streets, San Francisco. Ernest Coxhead, Hearst building, San Francisco, is the architect. Building will have steel frame, brick walls, terra cotta trimmings, tile roof and steam heat. Besides the main library and reference room, there will be a children's room, reading room, etc. Estimated cost $40,000.

Architects Compete for School Plans

The Merced school competition has been sifted down to a choice of four architectural firms and from this quartet a final selection will be made shortly. The firms "in the running" are Allison & Allison of Los Angeles, W. H. Weeks, San Francisco; Stone & Wright, Stockton, and C. H. Biggar of Bakersfield. In Palo Alto the contest for an architect for the proposed $100,000 high school lies between W. H. Weeks, J. J. Donovan and Allison & Allison.

Physician's Residence

Albert Farr, Foxcroft building, San Francisco, has let a contract for the construction of a two-story and basement frame, plaster and brick veneer residence on Green street, between Devisadero and Broderick, San Francisco, for Dr. Harry Alderson. Contract is for about $12,000 and includes a garage.

Watsonville School

A two-story reinforced concrete high school building will be erected at Watsonville, Cal., from plans by Wm. H. Weeks. The estimated cost is $100,000. Construction will be concrete with plain cement exterior, treated with a waterproof paint, Bay State or equal. All entrances will be of ornamental terra cotta. Roof will be clay tile and tar and gravel. Simplex or Hauser windows will be used and Hyloplate blackboards. There will be sixteen class rooms and an auditorium; latter will have a balcony and will seat 600 pupils. Mechanical equipment will include a steam plenimn heating system, with oil burner, sanitary drinking fountains, vacuum cleaning and program clocks.

Vallejo Masonic Temple

Plans are being completed by John Davis Hatch, Humboldt Bank building, San Francisco, for the construction of a four-story and basement Masonic Temple at Vallejo. Building will cost $85,000. Construction will be Class C, with either brick or hollow tile curtain walls, and terra cotta façade. The ground floor will contain stores. Mr. Hatch is also working on plans for two other lodge buildings. Mr. Hatch paid The Architect and Engineer a nice compliment the other day by renewing his subscription and stating that he had discontinued all other architectural publications.

Personal

Prominent among the visitors to Los Angeles the past several weeks was Mr. C. S. Patterson of Texas, son of Architect H. M. Patterson of the southern city. Mr. Patterson is a civil engineer and has been engaged in railroad work for many years, at the present time holding the position of Division Engineer of Wichita Falls District, of the M. K. and T. Railway system. Mr. Patterson was a guest of the Southern California Chapter of the American Institute of Architects at its September meeting.

$100,000 Berkeley Theater

Berkeley is to have another large moving picture theater. It will be built on the south side of University avenue, between Shattuck and Milvia streets, by Messrs. Bradshaw & Williamson, and will cost approximately $100,000. It will seat 2,000 persons. James W. Plachek is the architect.

San Mateo Park Home

Charles S. Kaiser of San Francisco has prepared plans for an attractive suburban home to be erected in San Mateo Park for J. E. Woodbridge, engineer for the Sierra Power Company. House and garage will cost $7,500.

Prohibition and Building

A phase of the effects of the States of Washington and Oregon going "dry" is found in many of the architect's offices, where orders for remodeling former saloons for legitimate business purposes are on the boards. The effect has been to raise the quality of store fronts, increase the sanitary conditions and add to the moral tone of the whole neighborhood. A booze joint was not only bad in itself but bad as a neighbor. Converted into a store building, it is having a good effect on adjoining store rooms and the result has been a transferring and improving of many buildings besides those formerly used for saloon purposes. Hundreds of thousands of dollars have been expended in this way in the city of Seattle, Portland, Spokane and Tacoma the past few months, resulting in marked improvement of the whole business sections of these cities.—Pacific Builder and Engineer.

Changes of Office Location

Messrs. Edelman & Barnett have moved their offices from the Black building to rooms 826-7 H. W. Hellman building, Los Angeles. Edelman & Barnett were the architects for the Black building.

Mr. John Parkinson has moved his offices from the Security building, Los Angeles, to a large suite on the Fifth street side of the fourth floor, Title Insurance building. The entrance will be at room 420, where a commodious reception room with marble walls and floor is provided. Mr. Parkinson has had offices in the Security building for nine years, this being one of the first large office buildings which he designed for Los Angeles. Mr. Parkinson was also the architect for the Title Insurance building.

Allen D. Fellows Recovering

Friends of Allen D. Fellows, architect of East Auburn, will be pleased to learn that Mr. Fellows is again able to be about, after having been under treatment for several months in the California Hospital, Los Angeles. Mr. Fellows has been a subscriber of The Architect and Engineer of California for more than ten years. In forwarding his check for his 1916-17 subscription, Mr. Fellows writes:

"You give the best magazine for the money I have ever taken and I receive some twenty-four different ones."

S. F. Chapter's New Officers

San Francisco Chapter, A. I. A., has nominated the following officers for the ensuing year: President, Edgar A. Mathews; vice-president, Sylvain Schnaittacher; secretary, Morris M. Bruce.

Nurses' Home for St. Mary's Hospital

Plans are being prepared by Willis Polk & Company, Hobart building, San Francisco, for a nurses' home to be built at St. Mary's Hospital, and which will occupy a portion of the block bounded by Stanyan, Hayes and Grove streets. The new building will be in harmony with the hospital, which was also designed by Mr. Polk. Funds are now being raised.

Residence Flats

Plans have been completed by B. J. Joseph of San Francisco for a pretentious set of residence flats to be erected on Pacific avenue, near Laguna street, San Francisco, for Harry P. Franklin. The building will be 30x90 feet, two stories and basement, and each flat will contain eight rooms and three baths. The estimated cost is $12,000.

A. W. Burgren Busy

Two commissions of considerable magnitude recently have been filled by A. W. Burgren, formerly of the architectural firm of Ross & Burgren, 310 California street, San Francisco. One is a three-story Class C apartment house to be erected on Powell street south of Jackson and to cost $20,000.

Berkeley School to Be Enlarged

Preliminary plans are being made by Architect Ernest Coxhead, Hearst building, San Francisco, for an addition to the new Garfield School in Berkeley. The plans provide for another story on the east wing of the building, which will give six additional class rooms. The estimated cost is $15,000.

Architects Are Busy

Messrs. Falch & Knoll, Hearst building, San Francisco, are quite busy. New work includes a four-story Class C apartment house for J. B. Schroeder, a one-story Class C store and market building on Ninth avenue for the Eisenbach Company, and a $12,000 residence for West Clay Park.

King Residence

The residence for Mr. Frank King, to be erected at Jackson and Walnut streets, San Francisco, from plans by Messrs. Bakewell & Brown, will probably cost close to $50,000. The design is in the French style, with steep slate roof and brick veneer exterior.

Library Plans Rejected

All plans for the Carnegie library at Madera have been rejected and will be redrawn so as to permit of a heating system, the cost of the entire work not to exceed $12,500.

Designing Big Movie Theater

It is announced that plans for the big moving picture theater at Fourth and Market streets, San Francisco, are being made by Alfred Henry Jacobs, architect of the recently completed St. Francis Theater on Geary street. The latter theater has occasioned some favorable comment on account of certain unique features, one of which is the placing of the picture screen at the entrance end of the theater, instead of forward. The seats all face the rear, the idea being to avoid the glare of the pictures when entering the theater. The new Market street picture house will seat close to 3,000 persons.

San Francisco Office Building

John A. Hooper, who is building a large concrete loft building on Battery street from plans by Kenneth Macdonald, Jr., has purchased the lot adjoining the new Sub-Treasury building on the south side of Pine street, and will erect an eight-story Class A structure there, part of which already has been leased by an Eastern insurance company.

Architect for Y. W. C. A. Building

Lewis P. Hobart has been commissioned to prepare plans for the new home of the San Francisco Y. W. C. A. The site is adjoining the Women's Club building, now under construction on the north side of Sutter street. About $150,000 will be expended on a Class A building, a feature of which will be a large gymnasium and swimming tank.

Class "A" Hotel Planned

Alfred I. Coffey, Humboldt Bank building, San Francisco, is understood to be making plans for a six-story Class "A" hotel to be erected in the downtown section of San Francisco. It is estimated the building will cost between $100,000 and $200,000.

Noted Architect Dead

R. Phene Spiers, the noted architect, died in London, October 4th. Mr. Spiers, in addition to being an architect, was a well-known pan-archaeologist, having done much research work in Eastern lands. He was an honorary associate of the American Institute of Architects.

Moral—Employ an Architect and Contractor

Jack Sprat, he built a flat,
His wife she drew the plan.
Between the two, when they were through,
It wasn't worth a d——.

Architects' Chapter Elects Officers

Mr. J. E. Allison, senior member of the architectural firm of Allison & Allison, Los Angeles, was elected president of the Southern California Chapter of the American Institute of Architects at the tenth annual meeting held at the Clark Hotel, October 10th. J. J. Backus was elected to the office of vice-president. Albert R. Walker, secretary, and August Wackerbarth, treasurer, were re-elected to their respective offices without opposition.

Percy A. Eisen was elected to serve a three-year term on the board of directors and S. B. Marston a two-year term.

Messrs. Albert C. Martin, S. Tilden Norton, Albert R. Walker, J. E. Allison and J. J. Backus were elected as delegates to the annual convention of the Institute to be held at Minneapolis during the first part of next December.

The names of Architect John C. Austin and Robert D. Farquhar of Los Angeles have been selected by the San Francisco Chapter of the American Institute of Architects to be submitted to the State Board of Control for consideration as judges of the competition being conducted for the selection of an architect to design the new State building to be built in the Civic Center in San Francisco. The San Francisco Chapter is to submit five names, the other three being members of the northern Chapter, to the State Board of Control, which will select three architects from the names submitted to act on the jury for the competition.

Among the Los Angeles Architects

Henry E. Bean is checking up the plans for the Markwell steel frame store, theater and office building at Long Beach for the owner with a view to refinancing and finishing the project.

Robert H. Orr is completing plans for the Claremont School for Boys at Claremont and work will be pushed as rapidly as possible. Foundations for three of the group of proposed buildings have been started. The buildings will be frame construction.

John Parkinson is rushing the working plans for the six-story and basement steel building for the Blackstone department store to be built at Ninth and Broadway and bids on the general contract will be called for soon.

Elmer Grey has prepared plans for a pergola 450 feet in length to be built on the residence grounds of G. W. Wattles at Hollywood. The pergola will be built along a winding walk following the contour of a hill and will be constructed with concrete posts and rough cedar timbers.

Montgomery & Montgomery have plans on the board for a twelve-room classical style residence to be built in West Hollywood for a man prominent in the realty world. The house will be constructed with hollow concrete walls.

Portland Architect Visits San Francisco

Mr. R. F. Tegen, architect of Portland, Ore., visited the offices of The Architect and Engineer recently. He and Mrs. Tegen were en route for Portland, having made a trip overland, extending through to Mexico, in their touring car. Mr. Tegen has specialized on hospital work, having completed nine hospitals to date, with a new one under contract, for which he will start the plans upon reaching home. He has just completed the hospital at Walla Walla, Wash. A previous commission of Mr. Tegen's was the $450,000 hospital at Vancouver, British Columbia.

$100,000 Church and Monastery

Plans have been completed and bids taken for a church and monastery at Santa Clara for the Carmelite Sisters. The building will be constructed of steel, concrete and brick and an estimate of $100,000 is placed on the work. The architects are Messrs. Maginnis & Walsh of Boston. Albert M. Caldwell of San Francisco will act as resident and supervising architect.

Store Building and School

Miss Julia Morgan has made plans for a $16,000 brick store and office building to be erected on Piedmont avenue, Oakland, for Mrs. E. L. Turner. The exterior will be of pressed brick with patent store fronts. Miss Morgan has also completed plans for a $25,000 frame and stucco school for the city of Marysville.

House for Miss Vrooman

Messrs. Bakewell & Brown will design the new bungalow which Miss Beatrice Vrooman will build on the east side of Gough street, south of Clay, San Francisco.

$15,000 Alameda Home

Plans are being prepared by John R. Miller, Lick building, San Francisco, for a two-story frame residence in Alameda for Charles Page. The house will cost in the neighborhood of $15,000.

Contract for Store Building

T. Patterson Ross, 310 California street, San Francisco, has let a contract for the construction of four brick stores on Bush street, near Kearny, adjoining the Russ Hotel, for the Shiels Estate.

Electrical Department

Architecture and Illumination

By WILLIAM KUNERTH
in the Lighting Journal.

In this article Prof. Kunerth discusses the necessity of cooperation between the architect, the decorator, and the illuminating engineer, and points out the impossibility of laying down set rules for the lighting of buildings that are not alike in other respects.

"CIVILIZATION is properly advanced by cooperation." Nowhere, perhaps, can these words by Doane of the National Lamp Works of General Electric Company be more aptly applied than in the realm of architecture and illumination. There are few cases if any, where cooperation between two distinct fields is more important or necessary. They are so related that each is essential to the other. The beauty of the landscape, the grandeur of architectural design, the charm of a painting, amount to little unless there be light to bring out the esthetic qualities that appeal to the mind and soul of man. On the other hand, even an abundance of light may avail nothing unless there be some object to illuminate and to bring to the attention of man.

The need of cooperation is being realized more and more by those engaged in the two lines of endeavor—structure design and illumination. The architect no longer attempts to master all the details pertaining to the completion of a building, nor does the mechanic interested in the lighting installation dispense with the advice of the architect. Each one is and should be the master mind in his particular specialty, but consultation and cooperation are also necessary. Inasmuch as no two buildings are alike in every respect, it is impossible to lay down set rules applicable to all cases. Therefore, it is readily apparent that between the two parties concerned, continuous cooperation is desirable. Each building presents a problem distinct from all others, and the purpose for which it is intended must decide the form of lighting.

The idea of sameness must be avoided in lighting as well as in many other fields. Conditions, environments, decorations, the use to which the building is put, and a good many other matters must be considered in designing a lighting system. Though it must not be given the most important consideration, usually it is given altogether too little thought and time. The lighting should not attract particular attention to itself, but it should enhance rather the object illuminated. It should be a means to an end, not an end in itself. If it is too much in evidence it may be detrimental both to the eyes of the observer and to the effectiveness of the object which it is supposed to set off.

On the other hand the energy spent on artistic design brings little return unless the design can be presented to the eye in such a way as to bring out the desired effect. This can be accomplished only by proper lighting. The case of lamp fixtures will probably illustrate the point both from the standpoint of artistic design and from that of lighting. Lighting fixtures are sometimes so elaborate in proportion to their illuminative capacity that the artistic chandelier loses all of its effectiveness. Service first and ornamentation second is a good practice and is gaining in favor.

The great need of cooperation between the two subjects under discussion is also well marked in the fact that seldom is a change made in the design of a room or of a building without the necessity of a corresponding change in the lighting installation. What the effect of the gas-filled lamp upon architecture will be is difficult to foresee, but it must be evident from the present tendency in the de-

sign of shades and reflectors that its effect will be nothing short of revolutionary.

There is perhaps no field where the lighting expert and the architect have so good an opportunity for combined effort as in work with churches. Few classes of buildings present a more complex lighting problem. This is due partly to architectural arrangement, partly to the demands of tradition, partly to practical considerations. In a church, lights may have to perform varied functions. They may be used for ordinary purposes, but may also form an essential part of the ceremonial of the church. They may be selected not for their illuminating efficiency, but for their symbolic effect and their religious associations. For this reason the old law prescribed a seven-branch candlestick to be kept before the eyes of the people. Christ said, "I am the Light of the World." As a symbol of Him, the Light of the World, Christians for a long time have preserved the custom of lighting candles. Primarily the candles were symbols, though they served the added purpose of illumination.

The light kindled in the Temple of Solomon was to signify that God was in the midst of His people. For that reason the windows in the Temple were narrowed from without to signify that the light came from within. Frequently stained glass windows were and still are introduced solely to increase solemnity by shedding a "dim religious light," "a many-texted gloom" over the building. In these and various other ways tradition has influenced the mind of man both in the use of light and in the plans of buildings. So the architect must still consider light both as a symbol and as an illuminant whether he design a lofty cathedral or lowly church.

Returning to practical considerations, proper control should be available both before and during service. Consequently the lamps should be grouped with controlling switches under the charge of an official who at the right moment can turn on all or a part of the lights without disturbance to anyone. But at all times the beauty of structural projections, the cornices, the mouldings, etc.—all these must be maintained and the lighting so arranged as not to lessen their effectiveness. Here, as elsewhere, glare should at all times be absent. This suggests that bare lamps should not be placed in the range of vision.

Since even those who do not profess interest in the religious service itself are influenced by the effect of the church as a whole and place great value upon the associations and architecture of old churches and cathedrals, one can see the importance of effective illumination and can appreciate the opportunity for abundant experiment in this field. Nor can one fail to realize the importance of applying such experimental results when once they have been obtained. It is only through the eyes that these features are perceived. It is therefore essential to minister to their comfort by securing an illumination physiologically correct, and to exercise great care that the lighting adopted make the contents of the church both interesting and readily visible.

There can be no question but that lights are a means of decoration in themselves, provided there is a total absence of glare. Artistic color effects are produced by the proper arrangement of lamps; and the use of colored light sources lends itself to the production of results not otherwise to be attained. Few of us fully realize the importance of the proper use of color both in schemes of lighting and in ornamental displays.

Before the World's Fair at Chicago the possibilities of exterior decorative illumination were little appreciated. To show how much can be done and is today being done in that direction, we need only consider the recent Panama-Pacific Exposition. Here the lighting system was planned to bring out all that was best in the architectural display and in the various artistic color schemes, using both electric and gas lighting, though other illuminants could have been used with equal effectiveness. The complete success of this project was possible only through the cooperation and assistance of all departments, architects, designers, sculptors, engineers, etc.

The real value of a lighting system is judged by its effect on the eye and the brain, from the physiological, esthetic, and psychological points of view. Efficiency and economy are not the only items worthy of consideration. If they were, much of the artistic both in lamp fixtures and in other decorations could well be omitted. From a psychological point of view we must consider the effect upon the user. Even if the degree of illumination is sufficient, the effect will not be satisfactory unless the lighting equipment harmonizes with the spaces in which it is installed, and unless the decorative features are displayed in their true values.

The Perfect Electric Water Heater

In the present active campaign that is being made to equip the modern American home throughout as an electrical palace, inventors are alert in all quarters in an effort to displace by electrical means the present methods of heating water for household purposes.

Although scientists have spent over a hundred years since the days of Joule in establishing beyond cavil the fact that heat is one form of energy whose units bear a fixed ratio with other units of energy, still even in this enlightened day inventors claim to be perfecting electrical devices for heating water in such amounts as would represent more energy imparted to the water than is supplied in the electric circuit that energizes the electric heater.

There is perhaps no other ratio more thoroughly and accurately established in modern science than the fact that a British thermal unit of heat energy is equivalent to 777.5 ft. lb. of mechanical energy and that one horsepower hour is equivalent to .746 kilowatt hours.

Using these unit ratios, it at once follows that a kilowatt hour of electrical energy is equivalent to 3412 British thermal units of heat energy. Assuming that one gallon of water weighs 8.33 lb., we find at once that 3412 British thermal units will raise 4.09 gallons of water 100 degrees in temperature. In other words, were an inventor to perfect an electrical water heating device with no wastes or losses at all, the best he could hope to accomplish would be to raise say four gallons of water to one hundred degrees increase in temperature for every kilowatt hour of electrical energy applied.

On a three-cent rate it is at once seen that even the perfect electric device could not heat water at a better figure than 0.750 cents per gallon heated one hundred degrees.

On the other hand, let us see what the modern perfect gas heater could accomplish. A cubic foot of gas contains about six hundred British thermal units. Hence every thousand cubic feet contains 600,000 heat units. With gas at 85 cents per thousand, this means that the perfect gas heater could raise a gallon of water one hundred degrees in temperature for a cost of 0.118 cents. Thus it is seen that the gas rate of 85 cents as opposed to the electric rate of 3 cents will heat six and one-half times the water for the same outlay in money, assuming that the heaters operate under the same efficiency factors.

It is not true, however, that gas heaters can be made to operate as efficiently as an electric heater. It is a well-known fact that gas water heaters as a rule seldom exceed 50 per cent efficiencies as compared with electric heaters which commonly run from 85 to 90 per cent. Indeed it is generally conceded that the modern gas range operates at as low as 25 per cent efficiency.

It is these low efficiencies which it seems impossible to better that make possible the early triumph of cooking and heating by wire.

Western hydroelectric companies are recognizing this disparagement in figures and as a consequence rates under a half cent per kilowatt hour are being granted for electric heaters operating on the storage systems. Such rates where practicable to grant are doing wonders in winning over new electrical loads that will be enduring and at the same time loads that present ideal conditions for hydroelectric plants.—Journal of Electricity.

Better Let a Contractor Do It

In the role of bridge builders, says an Arizona correspondent of the Times, the Navajo (Arizona) county supervisors are said to have scored a very small degree of success. The bridge at Taylor, of iron with concrete piers, fell into the creek soon after completion. It was fished out and put up once again, only to sag in the center and to be denied once more to traffic. It is told that the structure, which should have cost about $3,500, will represent about $15,000 of the taxpayers' money on its third erection.

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Electric Curbstone Signs

At an intersection of two thoroughfares in the business district of San Francisco an experiment is being made with a novel plan for displaying street names. Electrically illuminated signs bearing the street titles have been im-

bedded in the vertical sides of the curbs. These consist of waterproof cast-iron boxes, 40 inches long and 8 inches deep, perforated with the street names and illuminated by means of tubular electric lamps which are connected with the city lighting system. Two of these signs are installed at each of the four corners at the intersection.

Flood Lighting for "Old Glory"

Perhaps one of the most novel illuminations of "Old Glory" at night is found in a residence of a citizen of Schenectady, N. Y. The scheme of light projection on a roof has already proven successful, but under certain conditions this is not feasible.

The apparatus in this instance was at once simple and inexpensive. The flag measures 5 by 8 feet, and is suspended in front of the house from a staff projecting from an attic window. On the roof of the piazza below are mounted two 60-watt Mazda lamps and reflectors. These lights are not discernible from the street and the rays are directed on the flag from both sides at an angle. Current is supplied from an ordinary lamp socket in one of the nearby rooms.

The effect is strikingly beautiful, every ripple of the flag standing out in vivid contrast with the surrounding darkness. The colors are strongly emphasized by the artificial light. The possibilities of this form of illumination of the American flag throughout the country are great, and when one considers the edification afforded, the trouble and expense involved is small.

Pioneer Brick Man Dead

As we go to press word comes from Los Angeles of the death there of Mr. Charles H. Frost, pioneer brick manufacturer on the Pacific Coast and founder of the Los Angeles Pressed Brick Company. Mr. Frost died at his Southern California home on October 9th. Until two years ago Mr. Frost was the active head of the brick company, and for eighteen years he did more to alter the skyline of Los Angeles than any other single individual in the city.

In November of last year Mr. Frost became ill and retired from business life. He was attended at the time of his death by his son, Howard Frost, who succeeded his father in the presidency of the building material concern; his daughter-in-law, Mrs. Howard Frost, and a son-in-law, Dr. L. J. Huff. Mr. Frost was a Mason, a Shriner and a member of the Jonathan Club.

Mr. Frost's grandfather was Captain George P. Frost, who served through the Revolutionary War. Captain Frost was also a lineal descendant of the English Lord Pepperel, for whom the town of Pepperel, Mass., and Pepperel Mills were named.

Honor for San Francisco Designer

A press dispatch of recent date says that designs submitted by Charles G. Beersman, young San Francisco architect, for a Masonic temple in Yonkers, N. Y., were selected in competition with some of the most eminent architects in New York. Beersman studied in Italy after graduation from the University of Pennsylvania.

An Ornament to Market Street

The four-story addition to the Fife building at the gore of Market and California streets, San Francisco, is being completed by Messrs. Lange & Bergstrom, contractors. Mr. Schnaittacher, the architect, has worked out a highly satisfactory design and the building is now an ornament to lower Market street.

Partnership Dissolved

Mr. John T. Vawter has withdrawn from the architectural firm of Walker & Vawter, and A. R. Walker will continue business in the offices of the firm in the Hibernian building, Los Angeles.

* * *

Frederick Soper has prepared plans for a large modern English style residence to be built on a six-acre tract at Brentwood Park for G. E. Hazard.

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D'Arcy Ryan Compliments Willis Polk

By W. D'ARCY RYAN.

THE illumination of Market street now submitted to the public for its approval has been a labor of love, not only on my part but upon the part of many others. Whether it is good or not remains to be seen. We have all worked earnestly and seriously, and personally I am deeply appreciative of the sympathetic assistance that I have received.

The history of lighting has been a long one and its evolution has been slow. What little credit is due for this splendid success I desire to share with Willis Polk, architect, and Leo Lentelli, sculptor. Mr. Polk, at the inception of the scheme, looked up every lamp post in history. He raked the Champs d'Elysee, the Place de la Concord, Trafalgar Square, The Ring Stasse, Unter den Linden, the Piazza San Marco, and every other example available, down to the last word in decorative lamp poles on Michigan avenue in Chicago.

Mr. Lentelli spent months in studying the model for your Path of Gold poles.

The most interesting feature of this work, to my mind, is this: These poles are primarily trolley poles. If the trolley ever becomes obsolete then these poles will still be lamp poles. Only compare the unadorned trolley poles on any side street and you will see what I mean, then you will know what Mr. Polk has done.

In any event, San Francisco has now set an example in street lighting. She has once more done something. San Francisco knows how.

"A Loss There Was"

Why does an electrical contractor invest a thousand dollars or twenty thousand dollars in supplies and equipment and then work himself down to white hair and a five-cent cigar just for the honor of paying rent and being called a contractor? Why doesn't he charge a profitable price for his work so that his payroll may be met with a smile, his jobber seek his business and his banker welcome his goings out and his comings in? Because he doesn't know his costs. Isn't that the reason?

Just because some competitor foolishly bids too low is a mighty poor reason for bidding still lower in order to get a job. Is it not better to lose a job which a cost system shows to be unprofitable than to do the wild guess act, get it, and lose the profit on two other good jobs?

The man who gets the losing contract is not the only loser. He also robs the man who charges a fair, honest and just price based on a knowledge of costs. He befogs the minds of the architect and owner, putting money into their pockets and taking it out of the industry where it legitimately belongs.

Why not put a stop to this foolishness? Let the contractor admit "a loss there was" but make up his mind that in the future a profit there'll be, not only for himself but for the other fellow.—Journal of Electricity, Gas and Power.

Proposed Laws Stir Up Opposition

The San Francisco Real Estate Board has been stirred to opposition by certain proposed changes in the building laws of the State of California to meet some of the suggestions of the Housing Commission and others regarding tenement houses. A committee has been appointed by the president of the real estate board to take part in the discussions and to fight some of the proposed changes. President Samuel G. Buckbee of the board says:

Among other things it is proposed to cut down the height of buildings at least one story, to make material changes on buildings already constructed, to increase the size of light courts in new buildings, to increase the areas of yard space, do away with basements altogether and make many other changes that will materially affect financial investments as well as make it difficult to build economical business structures on small lots. This is an important question and has stirred action among board members. There is no more important legislation that could be enacted and that would affect this city so much as the legislation proposed by the housing institute.

Engineer to Design Proper Bathing Suit!

The question of what constitutes a proper attire for bathers along the beach at Santa Monica has aroused serious controversy involving city officials of that beach city, as well as members of the clergy, club women and the bathers themselves. So heated has the discussion become that the city officials now are endeavoring to decide upon an official bathing suit that will meet with approval from all the residents. * * * In a final effort to restore friendly relations, the city authorities decided to take action. City Engineer John A. Morton is reported to have assumed the task of designing an official costume for bathers which the city fathers say must be modest yet stylish and of sufficient brevity to allow free use of the limbs in swimming. Mr. Morton declared recently that his task was proving one of the most "difficult pieces of engineering" he has yet undertaken.—Southwest Contractor.

No Diving for Pat

An Irish laborer working on the roof of a building was too nervous to come down. Pausing at the top of the ladder for awhile, Pat saw the foreman watching him. "Come down," said he to Pat. "I'm afraid, sir," replied Pat. "Come down the same way as you went up," addressed the foreman. "No fear," retorted Pat. "I went up head first; I'm not coming down that way."

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The Contractor

HIS TROUBLES AND SOME OTHER THINGS

Relations Between the Architect and the Sub-Contractor*

By D. KNICKERBACKER BOYD, F. A. I. A.

IN the matter of direct letting of contracts, I have read all the literature on the subject, including your own "Report on the Evils of Sub-contracting." I can subscribe to the principal objections which you raise because I know that these evils have existed, but you must not condemn all general contractors. And, after all, what you are aiming to change, it seems to me, is not so much the sub-contracting evil as the sub-estimating principle.

I personally feel that too much stress has been laid on the sub-contracting evil without due regard to any perfectly feasible plan of controlling the estimating. Perhaps you have found this method the means of most quickly checking an abuse rather than the slower process of education.

All branches of the building trades have suffered alike from the "farming" and "huckstering" of sub-estimates and dickering with sub-contractors which is practised by some, but by no means all, general contractors. Sub-contractors who allow themselves to take part in this are equally at fault.

When work is awarded under one general contract, architects can help all the trades and very largely control the whole situation by requiring that a complete list of all sub-contractors be submitted with the estimate, the same to be subject to the approval of the architect and not to be changed without consent after the contract is awarded.†

In my own practice we invariably do this, to protect all interests and insure a selection of capable men. But in the case of heating we practically always take the estimates direct, and, whenever possible, do the same with plumbing. We turn over the lowest of these to the general contractors, who estimate with the understanding that they must accept them as sub-contractors' bids if they want the contract.

This gives us the opportunity to carefully select the bidders—a most important consideration. Only the men we deem best qualified to do work of the kind and size in hand are asked, and the number limited to from three to five. This is quite sufficient. Others should not importune for the privilege and so lessen their prestige. Architects should be resolute and not allow any one to estimate who does not do the high grade of work as those selected. This will save disappointments and insure to all an equal chance on the basis of good work. Under these favorable conditions the lowest figure should prevail in the award. Under general and open competitive bidding the low estimate is often to be regarded with suspicion.

In selecting those to whom they will entrust the work, architects ought to inquire and know whether they have the respect and confidence of their associates, as well as whether they are members of their respective associations. In this way architects can help to control the situation and you can cooperate with them in many ways.

I feel that it is quite right and only proper that, except in the case perhaps of advertised work, contractors should not be required to pay for blueprints for estimating purpose. Heating contractors should also retain one set for their files and records. They are doing their full share in bearing the cost of estimating, which under our present system is but a contribution to our enormous national waste and a factor in the high cost of building. It has been computed that there is spent in this country each year for the privilege of estimating the sum of over $85,000,000, more than one-half of which, on a conservative basis, could be saved if efficient methods along the lines of the so-termed "quantity survey system" were generally adopted.

Instead of hopefully waiting for proper methods of estimating to be evolved, let us do our share now in improving them in every way possible. Architects can help greatly in conserving waste of money and human energy in the heat-

*Extract from an address before the National Association of Master Steam and Hot Water Fitters.

†It may be of interest to know that Architect J. J. Donovan of Oakland has adopted this plan with splendid results.

ing field alone if they will do some very simple things, which I suggest that you can call upon them to do. Some of these are now being done by those architects whose first thought is real service to their employers—the clients. One of these is the preparation of clear and complete drawings and precise specifications which lessen the time and risks contractors take in estimating and which convey to them the assurance that they will not, if they secure the contract, be expected to make up for shortcomings of the architect.

I have seen some architects' drawings without figures outside or inside of the plans, and have read some specifications almost as brief as this: "Heat all portions of the building to 70 degrees in zero weather and guarantee these results." Here we have steam-fitters, say twenty to thirty, if under the sub-contractor evil, spending their time scaling off every office or room or enclosed area, when all this time could be saved if one draftsman in an architect's office had taken the time necessary to do this work once—and properly.

In that large number of every-day cases where no consulting engineer is employed, and where you are expected to do your own calculating and engineering, and assume all responsibility for results—only to be beaten out if you have figured even conservatively by some one not so scrupulous, intelligent or careful—why not refuse to estimate until you are furnished with a reasonable amount of data upon which to base your estimate?

I would urge you, individually and collectively, assuming that you are willing to estimate under these conditions, to insist upon certain basic requirements as a precedent to estimating. Architects can help you greatly if they will become accustomed to putting on every plan both dimensions of each enclosed space—perhaps even to computing either the area or the cubical contents of each enclosure—moreover the addition of figures to indicate the area of window and outside door openings would in many cases save much time and handling of prints to refer back and forth from plans to elevations and sections. Can you not take this up and perhaps consider symbols for drawings?

And in the matter of incomplete and indefinite specifications or of those equally as bad, imposing conditions or guarantees impossible to provide—even if they have been prepared merely in accordance with the routine of an antiquated custom—why not return them to the architect or the engineer responsible

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for them and frankly state your reasons for not estimating? Be courageous and do this for the good of the cause!

Obviously the architect who makes every heating contractor perform gratuitous calculating and engineering saves himself time, labor and cost, and transfers these not to one but to a large number of heating contractors—and, eventually, to the owners

And yet one of the singular factors in this condition of affairs is that the trouble often begins with the owners, who too often do not select their architects on the basis of competency and integrity. After allowing for the younger and inexperienced men who are selected on the basis of friendship or otherwise and should be given every practical assistance possible by associations of their fellows and of others in the crafts, the facts are that many architects who render full and proper services are the ones who charge a greater fee than those who do not, or rather, I should say, those who do **not** render or do not **expect** to render the nicer and fairer and, in the end, the more economical service, do not charge the owner as much as those architects who do. Unfortunately some owners give too much consideration to the question of fee in selecting their architects and do not always discriminate between the kinds of service, where the recollection of the quality will remain long after the fee is forgotten. You heating men have the same thing to contend with, so you know all about it, but the owners do not discover their mistake until it is too late.

Of course, for all work of any size, for power plants, and mechanical equipment and for work of a specialized nature, it is to be presumed that the services of a competent engineer have been engaged and the drawings and specifications prepared with accuracy and precision. Presumably such a man will be a member of the American Society of Heating and Ventilating Engineers. If not, he ought to be.

While we are speaking on the subject of clarity, why not let us cooperate to get rid of words in specifications which say but do not mean "very best quality" and the "or equal," in favor of calling for the brands, thickness and weight of pipes and for the various other products by the several names which will be acceptable?

More and more frequently a distinction is being made as to quality in materials of building construction and stronger encouragement is being given to those producers who, in spite of rigid competition, adhere to their standards of manufacture and make names for themselves under established brands.

Contractor's View of Specifications

THE following satire on the architect's specifications, from Engineering and Contracting, must have been written just after a bill for extra work had been rejected:

General: The plans and specifications are to be taken together. Anything shown in the plans not mentioned in the specifications and anything mentioned in the specifications and not shown on the plans is to be considered as both shown and specified; and anything wanted by the architect or any of his friends, or anybody else (except the contractor), shall be considered as shown and specified, implied and required, and shall be provided by the contractor without expense to anybody but himself. If he can do the work without expense to himself, the work shall be torn down and done over again, until the expense is satisfactory to the architect.

Architect: The term architect herein appearing shall be understood to mean the architect or any engineer that he foolishly but courteously employs to assist in making trouble for the contractor.

Plans: The plans are to be considered diagramatic, and are to be followed only where space conditions make it possible to avoid so doing. Coincidence between the plans and executed work shall not be considered a claim for extra compensation. The architect is not required to recognize coincidence. Anything that is right on the plans is to be considered right; anything that is wrong on the plans shall be discovered by the contractor, and shall be made right without telling on the architect or on the bills. Anything that is forgotten or missed out of the plans and specifications, but which is necessary or required for the comfort and convenience of the owner, shall be provided by the contractor, to the satisfaction of everybody (except the contractor) and in full accord with the evident intent and meaning of the specifications without extra cost to anybody but the contractor.

Rules and Regulations: The work throughout shall comply with all rules, regulations, caprices and whims of all city, county, state, national and international departments, bureaus and officials having or not having jurisdiction.

Materials: All the materials shall be the best of their several kinds. The contractor is expected to know and provide the best, irrespective of what is specified in detail. The architect reserves the right to change his mind about what is best. Any changes necessary to make work and material fit the mind of the

architect shall be made by the contractor without extra charge.

Permits: The contractor shall obtain and pay all fees, annual dues, assessments and subscriptions to masked balls, organizations and coat and hat checks.

Guarantee: The contractor shall guarantee and does guarantee that he will keep in complete working order, anything that the architect asks him to, so long as there is more work in sight in the architect's office.

Arbiter: In case of any dispute arising as to the nature, character or extent of work shown, specified or implied, the matter will be decided by referendum and recall, after which the decision shall be set aside and reversed by the architect and resigner-in-chief of the national government.

Payments: Payments, if any, shall be made on the architect's certificate. Architect's certificate shall not be considered negotiable, nor are they legal tender. When once issued, the architect assumes no responsibility for their future usefulness. Partial payments shall be made as the work progresses in the amount of 85 per cent of the value of the work done as judged by the architect. In no case shall the judgment of the architect cover more than enough to pay the wiremen and helpers every Saturday night. The material men must take the customary chances. The final payment, if any, shall be made when everybody is satisfied (but the contractor). Any evidence of satisfaction on the part of the contractor shall be considered a just cause for withholding final payment.

The contractor shall accept and hereby does accept the conditions hereinbefore appearing, for himself, his ancestors and progenitors, his family, heirs, executors, his ox, his assignee and the stranger within his gates.

To Stop Leakage in Tile Curtain Walls

Editor The Architect and Engineer:

Being a subscriber of your valuable magazine, I beg the liberty to ask for some information, providing it does not conflict with your standing rules.

I am about to plaster, for the owners, a certain building of this city over all exterior tile curtain walls and exposed concrete beams and columns. Between the lower side of concrete beams or girder and where the tile for curtain walls joins to it is where the water beats in when we have the driving rains, and I find cracks in the court walls, although their exterior walls have been plastered.

These cracks can be seen with the naked eye on the exterior surface. By plastering over these cracks will they be permanently closed? The shrinkage of the tile mortar joints is over with, for the building is nearly four years old.

My remedy is to take strips of close-woven gunny sack about 2 inches wide and soak them with roofers' cement (the prepared tar that comes with rubberoid or other composition roofing) and cover the aforementioned cracks.

When the roofers' cement becomes set I would then plaster over the strip. Now the point of information I wish to ask is, what would be your specification for the plaster mortar with waterproofing incorporated that would insure the permanent closing of the cracks?

Yours very truly,

H. H. Preibisius.

San Diego, Cal.

The method suggested by our correspondent ought to work out satisfactorily. A good waterproof cement is Medusa, manufactured by the Sandusky Portland Cement Co., or Duncan's cement, a Chicago product.—Editor.

Architect Herold Busy

R. A. Herold, Forum building, Sacramento, has started the working drawings for the $350,000 Masonic Temple to be erected in that city. He hopes to have the plans ready for figures in sixty days. Mr. Herold will start working drawings for the new White Hospital very soon. This will be of fireproof construction and will cost $150,000. He will also make plans for the Sisters Hospital in Sacramento at an approximate cost of $200,000.

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Building Outlook in Portland, Oregon

At last Portland is going to have a new postoffice building—a new one right up to the minute and for which we have been waiting, it seems, a century.

Time was when we had hopes, but now, right now, hope has been realized, Grant Fee of San Francisco is the contractor and Lewis P. Hobart of the same city is the architect.

True, the building is going to be located in what was formerly a swamp, or duck pond, but what matters that—we get the building!

Down in the "North End," bordering on the old "Red Light District" that was—that is the location where our benevolent Uncle Sam is going to spend a million dollars. The memory of many an old timer runs back to the days when he bagged a string of ducks in that swamp and came home to his hearth to regale himself in stuffed bird and a cool bottle.

Just where the contractor will find a foundation for the building, the inquirer knows not. Perhaps he will bring it with him, but as buildings need to have something on which to grow, so he will find something on which to erect this—maybe floating pontoons.

The flood of '94 overflowed this land and may again, in which case the dear public may have to hire boats in which to reach the delivery window.

* * *

Some considerable feeling has come out over the question of stone. Oregon folks claim that home stone is just as well adapted for building purposes as Indiana, Washington, or Idaho, but inasmuch as the Indiana was included and with its use Grant Fee was enabled to be "low" man, he gets the job and the Hoosier product goes into it.

Bedford stone has not shown up any too well in this climate, as we observe. Look at the public library, for instance. It resembles a bad case of smallpox, and seems to be getting into the advanced stages of that none too attractive malady. Subjected somewhat to salt air influences and a very wet climate, limestone gets into a tangle of chemical action and the damage is done.

Some of the stone, possibly from other quarries, seems to do better. The Wells Fargo building, for instance, looks quite well and seems to stand the conditions which obtain here.

We bid Grant Fee a hearty welcome and, despite some kickers who are reputed to have worked against the award, we think he will find the glad hand here and we trust, nay, believe, he will have smooth sailing—down in the former swamp of the North End.

The new Auditorium building is dragging on in the usual way of civic buildings, and while extension of time has been granted the contractor, yet, we think, most of us will live to see it finished.

What with taxes beating the high sky line, this building should never have been projected. Portland needs this as badly as a canine needs two tails, and we, being of the opinion that civic construction just to give work for mortal man is ill advised, yet we will share the joys and sorrows of others and make the most of the job.

A few years since Portland went into the public dock business and expended about $2,500,000 for land and buildings—thus far the paint looks nice and peaceful, not a scratch thereon—still it "put money into circulation," and what matters all else? Maybe we will get back our shipping, if Astoria or Seattle doesn't hog all of it—then we will be happy that we have a place for ships to berth.

* * *

Architect Doyle is completing plans for the $750,000 U. S. National Bank building, location of which is one block from the white marble palace of the First National Bank.

The new Benson "Tech" will be constructed by Messrs. Frieberg & McClennan for $169,917, of which S. Benson gives $100,000, hence its name.

Architect J. V. Bennes is doing the Anton Hutch building on Broadway—a "fur store" it is.

The Willamette Steel Works is doubling its capacity to take care of its share of the shipbuilding boom, which, by the way, has struck Portland hard—over $15,000,000 in contracts having been signed for sea floaters. The Northwest Steel Company does the metal work, the Willamette the "insides," while two or three others are engaged in wooden ship construction.

Fortunate we are that this business came along just now, when building operations are practically at a standstill.

W. L. Morgan, "father of the apartment house" in Portland, has gone to Detroit to show that "Tin Lizzie town" how to build apartments.

Chief Engineer Loney of the American Can Company is here consulting with the local manager as to the $600,000 plant which they are erecting—not here, but over in Seattle.

The Goheen Manufacturing Company, one of the oldest and largest paint manufacturing houses in the country, is about to erect a $300,000 plant in Seattle. These people are exclusive manufacturers of what are known as "chemically prepared paints," a high class article and

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sold the world over. This plant will take care of the business on both sides of the Pacific, while the Eastern plant will serve the Eastern coast and the London plant handles the European business.

During the campaign which initiated the prohibition law it was urged that it would, among other good things, reduce the police force, but our city has just added twenty-five men to it. Perhaps the brand which is being imported is the cause—it comes from California, you know—"the land of milk and honey."

A. J. Capron.

Painting and Decorating

For the past two years Mr. I. R. Kissel has been doing much residence work, including exterior painting and some very fine interior decorating, including enameling and frescoing. Prominent among the residences painted and decorated are those of Mrs. William Haas, 2007 Franklin street; Mrs. Abraham Haas, 2001 Van Ness avenue; Mrs. Sigmund Stern, Fair Oaks, Menlo Park; Mrs. Henry Sahlein, 1718 Jackson street; Mrs. Herman Schussler, 1905 Van Ness avenue, and Mrs. W. C. Graves, 2820 Scott street. Mr. Kissel has the contract for painting the building now being erected at Bush street and Van Ness avenue for the Overland Company.

S. C. Haigh Takes Over Bashlin Agency

Mr. S. C. Haigh succeeds the Brockmann Supply Company (in which he was formerly a partner) and will continue his energetic work of convincing the architects that the Bashlin valves and faucets are superior to all others.

According to Mr. Haigh, Bashlin compression and self-closing faucets differ from ordinary faucets in that they are unique in construction and have exclusive features. The success of the Bashlin valves with the renewable seat ring and disc led to the incorporation in Bashlin faucets of those advantageous features upon which the valves owe their success. The chief feature is the simplicity with which the faucet may be repaired under water pressure. This alone commands considerable interest and comment. Both seat-ring and disc are easily renewed in Bashlin faucets. Furthermore, the seat-ring, most subject to abuse, may be replaced under pressure.

When an ordinary faucet is handled by many people it is liable to get out of repair, because of the tendency on the part of some people to close it with unusual force or unintentionally exert extra and unnecessary pressure at the handle. No matter how much force is applied to the handle of a Bashlin faucet, neither the seat nor the disc is harmed, since the excessive strain is not communicated to the seat ring or disc.

Prometheus Now Have Los Angeles Agency

The Prometheus Electric Company, manufacturers of electric heating appliances, main office 232 East Forty-third street, New York, and represented in San Francisco by M. E. Hammond, Humboldt Bank building, have established an additional agency in Los Angeles, the new representative there being J. E. Dwan, 602 Citizens National Bank building, and well known in San Francisco.

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Growth of a Young Enterprise

The architectural and building world notes with gratification the expansion of another home industry—the Roman Paint Company, which was incorporated August 21st with a capitalization of $50,000.

It will be remembered that this company started in a very modest way a little over two years ago, doing business in a small plant located in Richmond. Approximately a year ago they took a lease of a large piece of property on Folsom street, near Eighteenth, San Francisco, the owners constructing, under the lessees' supervision, a modern paint factory, where they are now located and in a position to handle orders of any size.

The young men connected with the Roman Paint Company are distinguished for their energy and success under the trying circumstances that have existed during the past two years. The company's progress is due to the quality of its product and the aim is to keep up this high standard.

The following is a summary of the different products manufactured or handled by the Roman company:

Graphite, paste, semi-paste, liquid; No-Damp, waterproofing, black and clear; paste colors, for master painters; house paints; washable wall, flat and gloss; special paints; quick drying black, asphaltum varnish; "Technola," cement paint; Cub Brand, Gilsonite for barns, roofs, etc.; shingle stain compound; barrel head; Ferro carbon for steel, bridges, stacks.

Oak Tree Dentistry

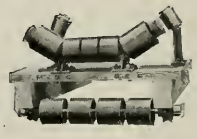
Architects and owners will be interested to know that an expert in arboriculture may be obtained in S. P. McClenahan, who has offices in the Merchants Exchange building, San Francisco. Mr. McClenahan is a graduate in tree surgery, spraying and orchard work. He is at present engaged in treating a number of "sick" oak trees on the University of California campus, Berkeley. Some of these trees, through age and exposure, have commenced to decay rapidly. To save them Mr. McClenahan is treating them in much the same manner as a dentist would operate upon a decayed tooth. The dead wood is first cleaned out, after which the cavities are thoroughly sterilized to prevent further decay. The tree is then reinforced with iron bolts or steel rods, the cavities are filled with cement and the surface is treated with waterproofing paint that covers up any outward defects and at the same time keeps out the moisture. There are over four hundred oak trees on the campus and they will be treated in groups as money is available. Mr. McClenahan has also treated the big oak trees at Herbert E. Law's country places and a number of the larger trees at Thousand Oaks and Northbrae, Berkeley.

Collman & Duncan Dissolve

Mr. A. D. Collman and Mr. W. C. Duncan, co-partners in the firm of Collman & Duncan, announce that their partnership has been dissolved, excepting insofar as the partnership relates to work taken under the firm name of Collman & Duncan now under construction.

Hereafter Mr. Collman and Mr. Duncan will solicit work in their respective names, trusting that they will individually enjoy the same consideration which was accorded them as Collman & Duncan.

AN IDEA



of the completeness of the M & G line of ***CONVEYING, ELEVATING, SCREENING AND MECHANICAL POWER TRANSMITTING MACHINERY*** can be gained by consulting the M & G catalog.

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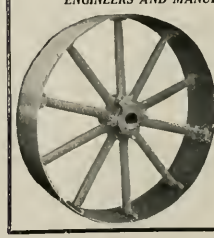

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A Numerical Designation

Jobbers of plumbing fixtures have had a difficult problem to solve in the matter of securing any benefit from their introductory or exploitation work, as like fixtures are sold to a dozen or more different jobbing firms in the same city. Holbrook, Merrill & Stetson of San Francisco have just opened for the special convenience of architects an extensive showroom on the ground floor of the Holbrook building, where many of the leading lines of plumbing fixtures are displayed. They hope to reap a benefit from their enterprise from the fact that each style of fixture they show has an exclusive number. If the architect uses this number in his specifications, and if the general contractor insists on this number, and if the plumbing contractor supplies this particular number (although it is identical with the fixture which can be supplied under a different number by any other jobber), then Holbrook, Merrill & Stetson will reap the benefit. A long shot—but it may win.

Roofing Tile in the Golden West

An interesting and valuable addition to the practical literature dealing with the use of burned clay roofing tile has recently been made by the Los Angeles Pressed Brick Company. With the exception of the foreword, which gives an enlightening description of the general uses to which this product may be put, and the many styles to choose from, the booklet is a collection of beautiful pictures of private homes and residences, churches and industrial buildings that have been enhanced in permanency and attractiveness by the use of this material.

Photographs of models of each separate style of tile, accompanied by detailed drawings showing the method of laying them, take up a part of the "new addition," while a page of specifications, detailing the conditions under which the tile should be laid and the manner of laying them, is also included. The booklet is concluded with a list of a large number of other buildings that have used the company's product as a roofing material.—From Brick and Clay Record, September 5, 1916.

Practical Course in Concrete

Wentworth Institute, Boston, is about to add to its courses of instruction one on practical concrete work, having for its object the training of young men for the work of concrete foremen and contractors. The Institute has set aside one of its best laboratory rooms for this concrete course, and is fitting it up with modern testing machinery and other necessary equipment to make possible various determinations that will illustrate the technical as well as the practical sides of the applications of concrete.

There Are Not Two Kinds of Dollars

Who is responsible for the capitalization placed on the possible dollar that may be saved for lighting service? The average householder will work harder and worry more in an endeavor to effect a reduction of one dollar in a lighting bill than a saving of ten dollars in any of the other household expenses. The one dollar saved on lighting will not buy any more of something else which they may desire than any other one dollar. It is up to the lighting man to hammer through an appreciation of this situation. You can find in any home, expenditures for milk, groceries, meat, clothing, amusements, which, by careful management would result in greater savings to the householder than any possible saving on lighting, and in the better class of homes the telephone charges are invariably greater than the lighting charges. As to whether a consumer would rather do without light in his home than telephone service is usually easily answered. It is up to the lighting men to secure an appreciation of lighting at least equivalent to that of telephone service and some of the other necessities in the home.

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Kitchen in Mr. Reddell's Home, 2578 Bueno Vista Avenue, Berkeley, showing treatment of kitchen with Hoosier cabinet installed, "Pullman" breakfast room in connection. Note the convenient arrangement of gas range (with overhanging hood) in relation to sink and kitchen cabinet.

We Have Made the Correction

Editor The Architect and Engineer:

You probably will be interested in the following letter just received by us:

Envelope opened by censor and stamped "Opened by Field Censor 20 82."

August 28, 1916.

White Bros., San Francisco.

Dear Sirs: Will you kindly ask your publicity agent to remove me from the list of your prospective customers. By some mistake or other he has secured an address where I have never resided, although I have spent a few months in Santa Ana on business, but that is such a long time since that I fear he has never troubled for at least three years to keep his list up to date. Your circulars pursue a devious course from Santa Ana to San Francisco and from there to my home in England and from there they are sent to me "somewhere in France."

It is only just to you to ask you to omit my name pending the end of the war and my return to America, when I shall be glad to get into touch with you again.

Yours very truly,

(Sgd.) R. R. Christien (3711),

A Coy. Artists Rifle Corps, B. E. F., France.

P. S.—Tell your agent to expiate his crime by sending enough cigarettes "bond free" for the men in our platoon!

Mr. Christien's name was taken from your List of Architects, so you can consider yourself the "guilty party," and send on some cigarettes, as we intend to do, taking him off the architects' list, as he requests.

The letter was in answer to a circular letter we sent out to the architects on August 2d. Yours very truly,

WHITE BROTHERS.

C. H. White, Manager.

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His Estimate Was Partly Correct

"Once upon a time there was a famous author who wanted to build a house," said Benjamin A. Howe in his book on building. "He had plans made by an architect and got bids for its construction in permanent and fireproof material. 'But that's half as much again as I have allowed,' he cried. So it was decided to build in cheaper construction and 'by day's labor,' with the direct supervision of the author's family, thus saving the contractor's profit. When the house was finished—and it was very attractive, even though it would never be a family homestead, because it would hardly last long enough for that—and the famous author was happily ensconced, he was asked: 'Was the house built for your original allowance?' 'Half of it was,' replied the famous author."—Improvement Bulletin.

New San Francisco Buildings

Several large building projects for San Francisco have been announced the past month. Captain John Barneson is reported as being the promoter and principal financial backer of a $3,000,000 fireproof warehouse and wharf at Mission Rock. It is also proposed to construct a bridge from the shore at China Basin a distance of 1,000 feet.

Announcement has also been made that Captain William Matson, head of the Matson Navigation Company, had acquired from Henry C. Callahan the south corner of Market and Main streets, a full 50-vara lot, for the purpose of constructing thereon a large Class A office building to be occupied exclusively by the local shipping interests. The size of the building, the cost, etc., will be determined within the next few days.

A. C. SCHINDLER, President. CHAS. F. STAUFFACHER, Secretary

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"Pacific" Catalog

An innovation in catalogs is introduced by the manufacturers of "Pacific" plumbing fixtures in the new "C" edition of their catalog.

Decided advantages have resulted in the grouping of wares, indexing these sections with protruding tabs, and eliminating lengthy descriptives.

Architects suggested many of the improvements contained therein, one of the most favorable being the reduction in size so as to facilitate handling. The suggestion carried out has resulted in a neat, compact 6x9 inch illustrative and accurate guide for plumbing fixture specifications.

This progressive firm is to be commended for the enterprise shown in conducting the extensive plumbing fixture industry located in California, and the issuance of a time-saving catalog and handbook.

Architects, contractors and plumbers not already supplied with a copy of this catalog should send for one immediately. Address "Pacific," 67 New Montgomery street, San Francisco.

Manual Training School

Plans have been completed by Charles E. Hodges for a two-story manual training building to be erected for the Redwood City school department. The structure will rest on wood piles and will be frame with stucco exterior. The estimated cost is $12,000. Mr. Hodges also has made plans for alterations to the country residence at Woodside of Mr. William Fitzhugh.

Hotel Addition

Messrs. Reid Bros., architects of the new hotel at Byron Hot Springs, have been commissioned to prepare plans for a substantial addition to that hostelry. Construction will be of reinforced concrete. The building probably will be two stories high.

Spreckels Refinery Addition

The San Jose Brick Company has resumed operations, with a number of large orders on hand, one of which calls for a million brick to be used in the erection of the Spreckels Sugar Refinery at Spreckels, Cal.

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Plate K1007—KOHLER enameled one-piece sink, with right-hand drain board.

Institute Journal Is Scored

Since the Institute Journal was brought into being, there has developed a wide diversity of opinion regarding the real usefulness of this publication. Institute members are by no means unanimous in its praise. On the contrary, what the Journal contains and what it does not contain are subjects being discussed with almost cruel frankness, as witness the following excerpt from a contribution in the Architectural Review on "Advertising in Relation to Architecture," by Mr. Thomas P. Robinson, A. I. A.:

Why not make the Journal over into an organ of publicity in itself? This would necessitate certain changes of policy, editorial and financial. The contents would tend to become readable for the public, and might approach as a model in this respect another "Journal" which goes to our homes. After all there must be some generally interesting things to be said about architecture. If it is thought undignified to be interesting, it may be suggested, as a compensating factor, that by this means we are not losing our dignity, but merely shifting it from the editorial to the financial side. A popular magazine, by commanding an audience, would command at the same time the support of legitimate and extensive advertising. It doesn't take a publisher to know that a subscription list of half a million is more attractive to an advertiser than one of perhaps a thousand. Purely professional matter could be sent out as leaflets with no advertising at all. As the Journal now stands, it is thought in some quarters to be a kind of architects' toy—fine enough in itself, and legitimate also, if *only* the architects paid for it!

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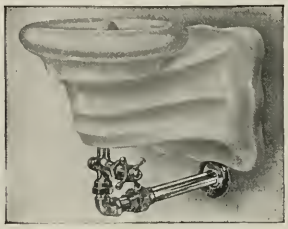
Resigns Institute Membership

Charles S. Kaiser, graduate of Columbia University, whose clever work is well known to San Francisco architects, has resigned his membership in the San Francisco Chapter. It was Mr. Kaiser's plans, submitted in competition for the Sacramento Carnegie Library, that failed of judgment, due, it is claimed, to an oversight on the part of the jury.



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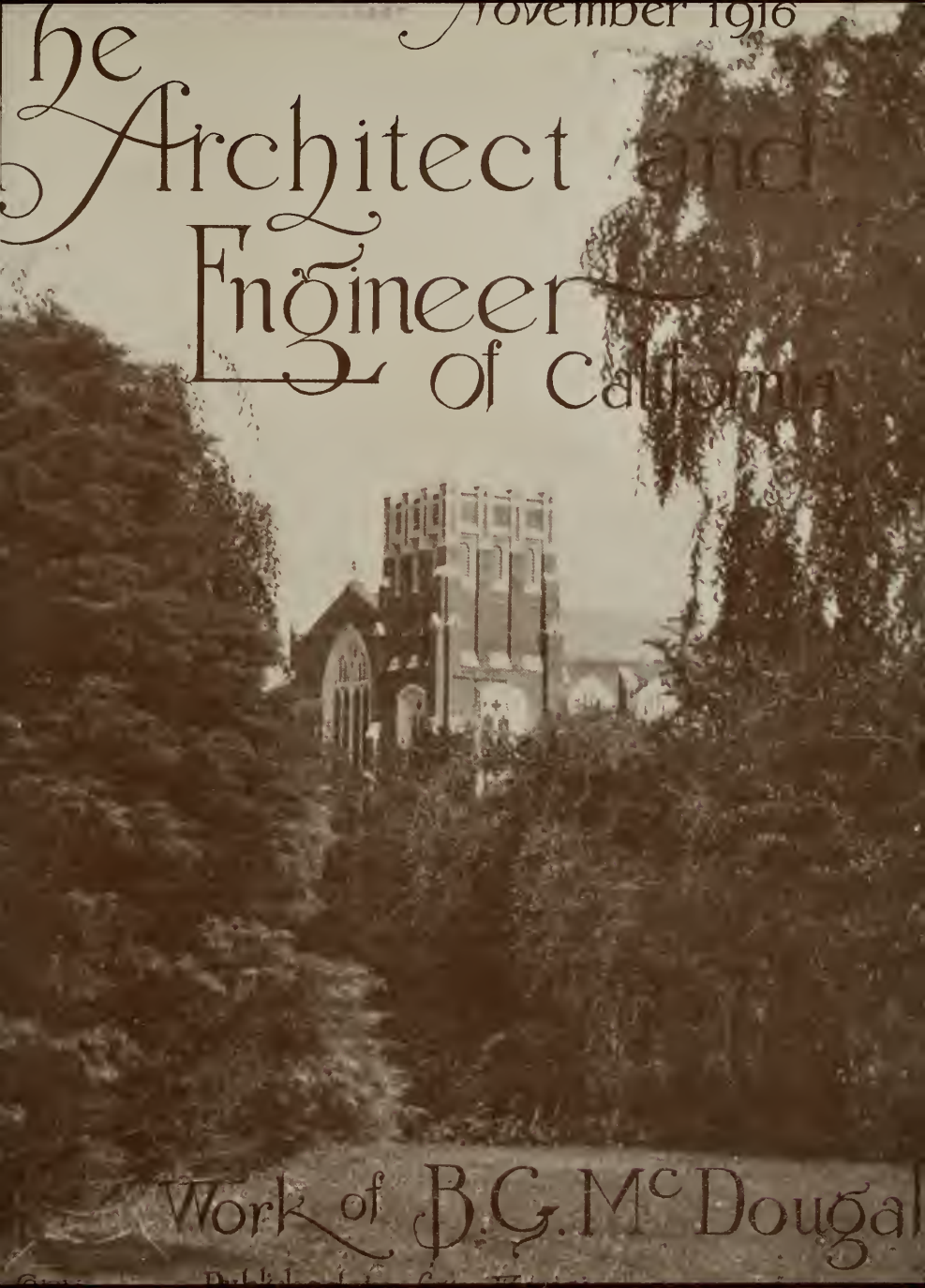
November 1916

The Architect and Engineer of California



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$1.50 a Year

Volume XLVII
Number 2

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Issued monthly in the interest of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast. Entered at San Francisco Post Office as Second Class Matter.

COLONNADE, KLAMATH COUNTY COURT HOUSE
BENJ. G. McDOUGALL, ARCHITECT

Frontispiece
The Architect and Engineer
of California
for November, 1916

THE
Architect and Engineer
Of California

VOL. XLVII. NOVEMBER, 1916 No. 2.

The Work of Benjamin G. McDougall, Architect

With a Few Words on Criticisms

By B. J. S. CAHILL, A. I. A.

Federal Realty Building, Oakland

FROM its Greek derivation the word criticism means literally a judgment. But somehow, in the course of ages, the word, in the minds of many, has come to stand exclusively for censure. In a world where things are always well done, Mars possibly, the word might have come to mean the opposite; and a judgment on any question of art or morals might mean pure praise. As a matter of fact, criticism in the scholarly and correct sense still means judgment, in spite of the daily press. Now there is a mean little quirk in human nature which enjoys every process of picking holes. There is always real zest in an evening spent in the sport of backbiting. It is natural to "knock," whereas boosting only comes by effort.

The criticism of a piece of architecture which roasts is generally much more interesting reading than one which only explains and perhaps praises.

The habit of withholding praise is part of the same instinct which fears to give anything. It is part of that mean and niggardly temperament which is the basic element of big business, the instinct to take the very most and give the very least. I have heard it said of a certain close-fisted, tight-wad New England Yankee that he never gave anyone a hearty handshake lest he might be forced thereby to yield a little of the natural warmth of his own body!

On the other hand, in the interest of good art, fools should be discouraged. In face of the deplorable taste of our generation (and if you doubt it go to the nearest movie), the critic who can chastise bad art wherever he sees it surely ranks high among the saviours of civilization.

But the trouble is that most so-called criticism is no more than one school of thought carping at another. This sort of criticism serves no particular purpose whatever. It is as though apples and oranges could express themselves and started to find fault with each other. The oranges would find that apples were the product of a cold and miserable climate, that they lacked vivid color, were hard, dry and—everything unlovely. Wasn't it an apple that brought discord into the world, both in Eden and Olympus, and caused The Fall and the siege of Troy, etc.? The apples might say that their rivals were false alarms, all screaming color on the outside but mostly pulp and skin within. They might ruin digestions in a Bronx cocktail, but they could never mend it with malic acid. And if the apples

FEDERAL REALTY BUILDING, OAKLAND
BENJ. G. McDOUGALL, ARCHITECT

DETAIL, UPPER STORIES, FEDERAL REALTY BUILDING, OAKLAND
BENJ. G. McDOUGALL, ARCHITECT

FIRST STUDY, FEDERAL REALTY BUILDING, OAKLAND
BENJ. G. McDOUGALL, ARCHITECT

PERSPECTIVE LINE DRAWING, FEDERAL REALTY BUILDING, OAKLAND
BENJ. G. McDOUGALL, ARCHITECT

BROADWAY ENTRANCE, FEDERAL REALTY BUILDING, OAKLAND
BENJ. G. McDOUGALL, ARCHITECT

ENTRANCE LOBBY, FEDERAL REALTY BUILDING, OAKLAND
BENJ. G. McDOUGALL, ARCHITECT

ELEVATOR FRONTS, FEDERAL REALTY BUILDING, OAKLAND
BENJ. G. McDOUGALL, ARCHITECT

had made trouble, was not the apple of discord an orange after all, masquerading as a golden apple? And was not the Garden of Eden as much a myth as the Garden of the Hesperides? Moreover, when it came to the Fall of Adam, have not many a score of the sons of Adam broken their necks on bits of orange peel since, whereas it was the fall of an apple that inclined Newton's mind to the greatest scientific discovery of all the ages?

And so the controversy might go on. In fact, it does go on, and instead of our critics condemning oranges that are juiceless and pulpy and rejecting apples that are withered or worm-eaten, they waste their temper and their time in worrying because the best Spitzenburgs haven't an orange skin and prime navels can't be made into hard cider.

This is exactly the attitude of the romanticist view of the classic spirit in architecture! He is out of sympathy with the classic spirit and bewails the lack of moral, symbolic or poetic expression in our City Hall, which is conceived along lines that do not lend themselves to any such expression. A few days ago one of the very ablest painters in the country worked himself into a fine frenzy over the same question. His pictorial outlook, steeped in character, color and "calor," failed to see anything worth while in the more rigid, frigid formality of French Renaissance, the apparent *froideur* and *fadeur* that Taine found to be so often a concomitant of classic excellence.

When Ruskin made his famous comparison between the Gothic Griffon and the Roman Chimera, he expressed the antagonism of one school of thought towards another in a manner that has never been surpassed, only that as advocate for the Griffon in the days when classic practice had degenerated to the limit of cold, dry formalism he, of course, did not state the case for the Chimera.

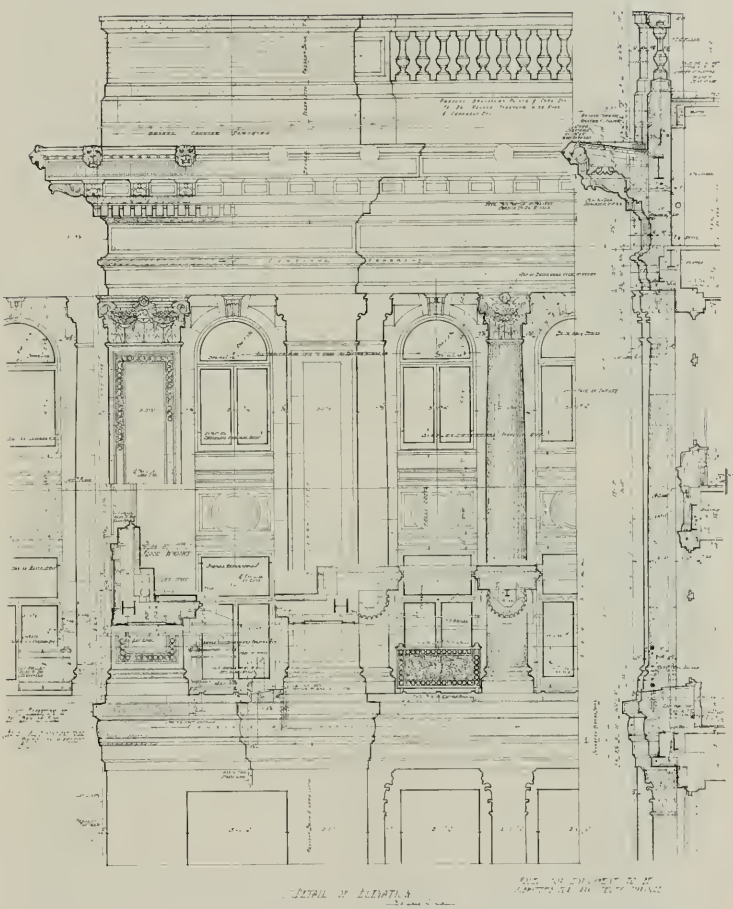
Obviously there is much that is dry about the classic and the fervid ones of each age clamor for what is "juicy." Ruskin, in this famous comparison, was plainly praising oranges at the expense of apples. He was an artist by training and preferred the pictorial fruit, the stimulating and provoking thing, rather than the drier, milder thing.

All this is controversy and not criticism. To everything made or conceivable there are at least two sides, just as there are two sexes, just as there is day and night or Hughes and Wilson!

The critic's function is to render a verdict whether work is good or bad of its kind, and overwhelming arguments can be adduced to show that the judge should wholly praise or wholly blame.

In the architectural field a public building like the City Hall of San Francisco is already judged by several successive tribunals and placed positively among the elect—and I use the word literally, because elect means chosen (in politics we say elected), and a competition wherein over ninety trained architects—the best we have—take an eager part is *ipso facto* an elaborate final and emphatic judgment that this plan these architects have proposed on paper is the best that our elaborate and expensive machinery of selection can hit upon. If still further judgment is to be rendered on top of this judgment, it would seem that it must be mostly in the nature of further endorsement or explanation, with perhaps some well considered suggestions where improvements in minor matters seem reasonable. And this only because it is possible to modify and improve in the period preceding the perfecting of the working drawings. These suggestions, moreover, should express a consensus of various persons' opinions rather than a personal opinion. This sort of criticism is very welcome and serves a definite, useful purpose, whereas a belated wail when the structure is finished, that it is all wrong, serves no purpose but to provoke a snicker

STANDARD OIL BUILDING, SAN FRANCISCO
BENJ. G. McDOUGALL, ARCHITECT



DETAIL OF ELEVATION, STANDARD OIL BUILDING, SAN FRANCISCO
BENJ. G. McDOUGALL, ARCHITECT

ENTRANCE LOBBY, STANDARD OIL BUILDING, SAN FRANCISCO
Benj. G. McDougall, Architect

PROPOSED OFFICE BUILDING, SAN FRANCISCO
Benj. G. McDougall, Architect

among the groundlings, tickle the controversialists of the hostile camp and arouse the instincts of those more keen for the lower contentiousness than for the higher criticism.

It is human nature, but not the best in human nature, that loves a dog fight.

Criticism or judgment must not mix up its rules and standards. Oranges must be judged by orange standards and apples by apple standards.

If radical objection is made to the whole spirit and character of any important building representing the genius of the time and place so completely as does the new City Hall of San Francisco, objections can only have value that include also all other building done at the same period and in the same spirit.

It is reasonable to insist that apples are better for us than oranges, or vice versa, but rather silly to condemn oranges because they won't make pie or apples because they won't make marmalade!

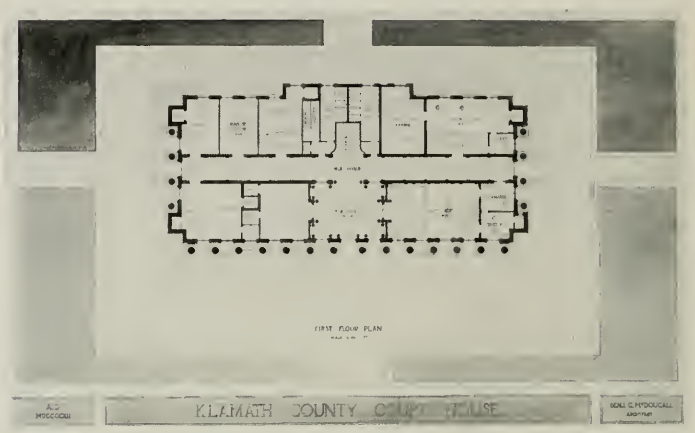
Assuming then that the right architectural criticism won't look for symbolism in classic work which is all form or insist on pure form in Byzantine motives which are mostly symbolism, but will confine itself to the good points inherent in each type, it remains to indicate the chief uses of criticism within these limits.

APARTMENTS AT 800 BUSH STREET, SAN FRANCISCO
Benj. G. McDougall, Architect

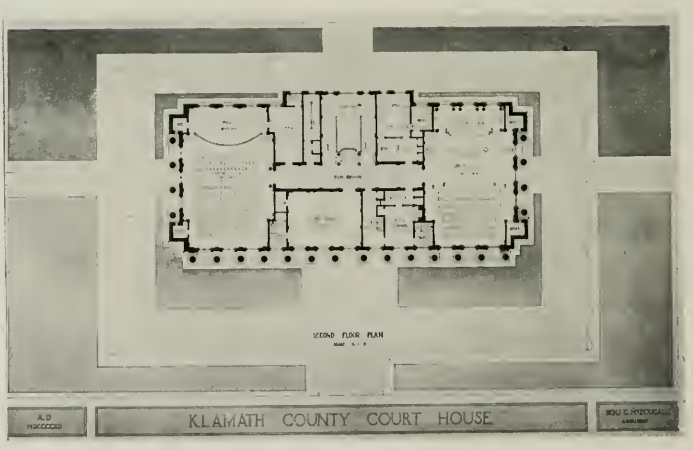
ENTRANCE TO APARTMENTS AT 800 BUSH STREET, SAN FRANCISCO
BENJ. G. McDOUGALL, ARCHITECT

ENTRANCE LOBBY, APARTMENTS AT 800 BUSH STREET, SAN FRANCISCO
Benj. G. McDougall, Architect

THE COURT, BUSH STREET APARTMENTS, SAN FRANCISCO
Benj. G. McDougall, Architect



FIRST FLOOR PLAN, KLAMATH COUNTY COURT HOUSE
Benj. G. McDougall, Architect

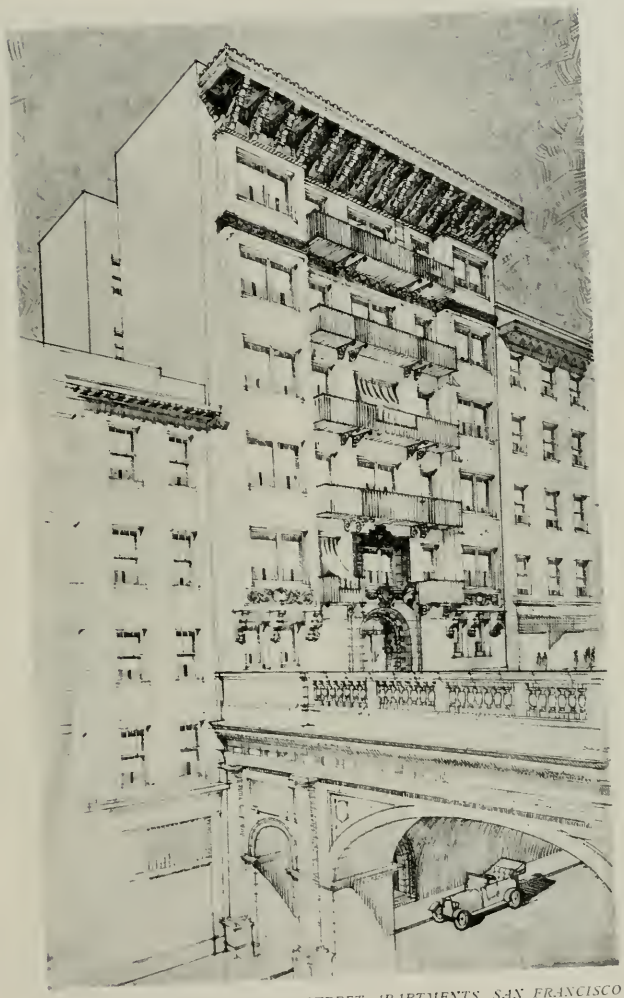


SECOND FLOOR PLAN, KLAMATH COUNTY COURT HOUSE
Benj. G. McDougall, Architect

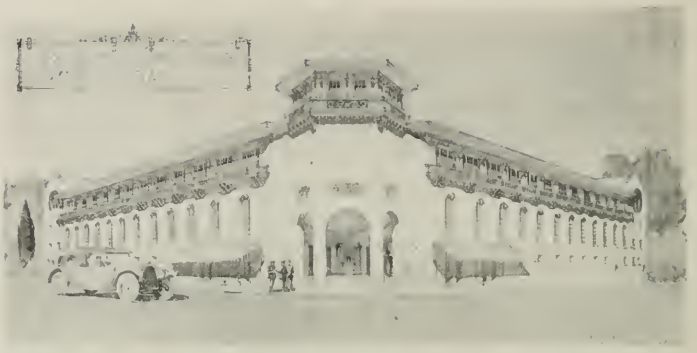
Y. M. C. A. BUILDING, BERKELEY, CALIFORNIA
BENJ. G. McDOUGALL. ARCHITECT

SHATTUCK HOTEL, BERKELEY, CALIFORNIA
Benj. G. McDougall, Architect

LOBBY, SHATTUCK HOTEL, BERKELEY, CALIFORNIA
Benj. G. McDougall, Architect



PROPOSED STOCKTON STREET APARTMENTS, SAN FRANCISCO
BENJ. G. McDOUGALL, ARCHITECT



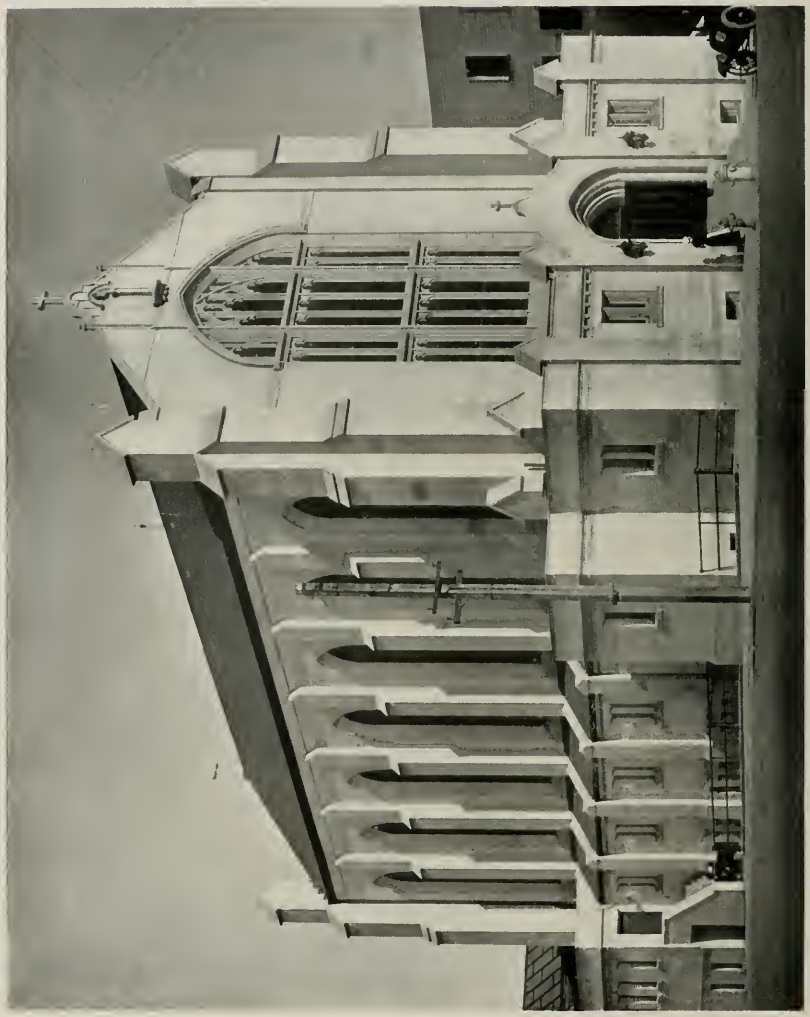
SWIMMING BATHS, ALAMEDA, CALIFORNIA
Benj. G. McDougall, Architect

PROPOSED APARTMENTS FOR THE NIGHTINGALE ESTATE, SAN FRANCISCO
Benj. G. McDougall, Architect

APARTMENT HOUSE FACING LAKE MERRITT, OAKLAND, CALIFORNIA
Benj. G. McDougall, Architect

It is assumed that a criticism or judgment is in the main a verdict for or, in rare and exceptional cases, against; that the work criticised is in the main good and to be praised, or bad and to be condemned. This is of course in direct variance with the pedantic notion that criticism consists in picking out the flaws. This notion is of course a hold-over from school days, when the *patron* or professor makes a point of showing up defects for purposes of education. In executed work of an accredited architect this is seldom necessary unless the defects are excessive, because it is clear that in most cases the fault is but a fraction of the sum total of good qualities, and in a brief review, unless due credit is given for the good of any work, any stress of the defects is very much over-emphasized. An architect whose work is in the main sound deserves no such discouragement. Nor can one lightly accuse any work without knowledge of all the conditions of the design, including the intentions of its author. In many cases so-called defects in a design are merely defects in the critic's apperception. If strictures are made, they should be proportionate to the general result, and the critic's reasons for stricture should be clearly and frankly stated. Nothing is easier than destructive criticism or ridicule. Nor is any good end served by condemning well-meaning mediocrity or the slips and fumblings of the young and the sensitive, so long as our verdict is in the main favorable. When a work is bad and shows shallowness, ignorance or insincerity, it should be damned without fear or favor, especially if important work fall to the hands of an incompetent. These cases may be rare—they may seldom be dealt with at all—but in no way can the profession be served better than by ridiculing thoroughly bad work. The consciousness that some one may some day pick out a building for professional censure will be a powerful and persistent force in the discouragement of slackers.

As to the ability to detect bad design, nothing is easier. Anybody can see defects, particularly the author of them. But some skill and practice is needed



ST. LUKE'S CHURCH, VAN NESS AVENUE, SAN FRANCISCO
BENJ. G. McDOUGALL, ARCHITECT

INTERIOR, ST. LUKE'S CHURCH, SAN FRANCISCO
BENJ. G. McDOUGALL, ARCHITECT

PROPOSED COUNTRY CLUB BUILDING
Benj. G. McDougall, Architect

ST. PAUL'S EPISCOPAL CHURCH, OAKLAND, CALIFORNIA
Benj. G. McDougall, Architect

INTERIOR, ST. PAUL'S EPISCOPAL CHURCH, OAKLAND, CALIFORNIA
BENJ. G. McDOUGALL. ARCHITECT

RESIDENCE, CLAREMONT COURT, CALIFORNIA
BENJ. G. McDOUGALL, ARCHITECT

AN ENTRANCE DETAIL, RESIDENCE IN CLAREMONT COURT

to show why they are defects. Much more difficult is it to see merit in another man's work than weakness in our own. It is amazing to note the general lack of appreciation one architect has for the work of another. It can only be compared to the indifference of the public at large to all of them. Therefore, it seems that the habit of pointing out the merits of current work from time to time and occasionally indicating shortcomings must do a certain amount of good to the profession and through the profession to those related to it, and so by diffusion finally to the outside public.

Nothing could be better for the profession of architecture than to stimulate public interest in the mysteries of design and since the average man in our modern civilization gets his ideas through print rather than through pictures, the plain citizen needs his architecture translated into words before he can attain to a full and complete interest or understanding of it.

Therefore, in describing briefly the work of various architects, a new and wider interest is given to their output through the owners, the occupants and the constructors of each building. This interest, once aroused, spreads in ever-widening waves until finally at least some faint ripple of it reaches the remotest units of the community.

With the increase of well-trained men and very marked improvement in architectural practice, it is not out of the way to look to a growing interest in architecture among the people through magazine and newspaper discussions when once the writers of the day have discovered the possibilities of interest in the fascinating field of architectural criticism.

Such diffusion of interest in architecture by way of literature has an unlimited field and already we see signs of it on the newsstands of the nation.

* * * *

Very few people who live on the west side of the Bay realize the rapid growth of Oakland

CORNER OF RECEPTION ROOM, HOUSE OF BENJ. G. McDOUGALL

and, more important, the development of the civic spirit which lies back of the remarkable improvements of the last decade. The mere wealth and population of a town counts little if, back of it all, there is not a certain pride, ambition and will to excel, which have done so much for cities like Chicago and Los Angeles.

A remarkable example of this spirit, and it is not pure business that inspires such ventures, but a genuine, an almost poetic, enthusiasm, is embodied in the Gothic gore building at the rather sharp intersection of Broadway and Telegraph avenue, Oakland.

That a modern skyscraper should logically garb itself in Gothic raiment has been a conviction and a hobby with the writer long before the West Street building or the Woolworth Cathedral were even thought of.

As far as I know, this Federal Realty building is the only considerable example of its kind on the Coast. The ingenuity of its plan, the boldness of its composition and the massed interest of its bewildering detail combine to place its architect, Mr. Benjamin Geer McDougall, in the front rank of the profession. From the start this was a difficult problem, and not only must we congratulate the designer on his triumph, but also the men who put their enthusiasm and their money into a venture whose yield is so much more in the interest of fine arts than of finance.

The shape of the lot, with an apex of eight and a half feet only, was dead against a profitable plan. To make it florid Gothic, the most expensive of all styles to build in, was practically to abandon all hope of adequate returns. None the less, owners and architect went bravely ahead to develop a building that is not only the most finished ornament to the streets of Oakland but a triumph of architectural adaptation on difficult and untried lines that would be notable even in New York. The essence of the plan lies in its bay windows, which project to the limit of the law and of course add substantially to the rentable floor space. The narrowness of the lot can best be appreciated in noting that throughout the whole area there is but one solitary inside column; nor are the girder spans excessive or even exceptional. For the rest, the space economy of the plan rivals that of an ocean liner, to which the building in its steel frame stage bore a peculiar resemblance when viewed on edge.

The real success of the design, apart from the multiple verticality of the lines and the recession of the front at the seventh story, lies in the bold use of a high-pitched slate roof edged and ridged with terra cotta and crested with bold perforated crenellations.

This roof not only encloses water tanks and elevator machinery, but it immensely contributes to the dignity of the silhouette, while the plain slopes of slate serve to make a dark field and a foil to bring into sparkling relief the pointed pinnacles, the crocketed spires and the tapering baldachins of the many-gabled dormers of the attic.

Naturally much of the real spirit of Gothic must evaporate when its features are machine molded in warm, creamy terra cotta instead of being hand-cut in cold grey stone. None the less, a surprising amount of Gothic is somehow infused into this pile, which serves to prove what is possible on these lines in the hands of a skillful designer.

So successful a design in so difficult a field, where there is little or no precedent, argues very eloquently that in other and more familiar problems Mr. McDougall will surely show an accomplished hand, and in a brief contemplation of the following performances the reader will not be disappointed.

The Standard Oil building, as it stands in the photograph, might tempt a casual critic to say what Montgomery Schuyler said of a certain skyscraper design with a somewhat redundant crowning piece—"one ought not to say 'amen' twice." As a matter of fact, in certain church music we have heard amen said, sung and chanted in four solos, chorus and fugue—not twice, but a hundred times. Moreover, ancient Persian and Pontifical tiaras had three crowning rims, while Buddhistic topes have nine, so that analogies in art are not always conclusive. In this case the double crowning colonnade tells of an additional two stories not anticipated in the original design. The old cornice might have been retained and the addition treated as a stilted attic, but we think that lifting the cornice bodily over an added order is the better solution. The original exterior is according to the established formula for all tall office buildings in the classic mode.

An unexpected feature of the first floor interior consists of a quite sumptuous entrance and elevator hallway, which runs magnificently the whole length of the building. It expresses to a nicety the princely character of one of the world's wealthiest corporations, and it impresses the visitor most profoundly with the importance, the perfection and the power of this most efficient and most successful of all America's business organizations, one of the few really big concerns that invariably lives up to its contracts.

The plans for the Klamath County Court House will repay careful study, as a very clean-cut and classical solution of the problem. The parts all fit together so neatly that one wonders why the rear pavilion was not either wider, to include the upper rooms, or else narrower, to express the stair system, in either of which arrangements it would have yielded, we think, more rhythmic proportions to the massing of the outside and more dignified outlines to the departments inside.

The Berkeley Y. M. C. A. is a strong design in sober Georgian, less effective in photogravure than in fact, because the real contrasts of color cannot be fairly interpreted in mere black and white, so that a certain harshness in the picture is not at all felt in the actual building.

TERRACE, RESIDENCE OF BENJ. G. McDOUGALL, CLAREMONT COURT

Another Berkeley building of a freer and more picturesque type is the Shattuck Hotel, originally designed in the garden city spirit but finally assuming a more urban aspect, as though Berkeley aspired to be something more than just a university town.

It is perhaps the test of the architect of today that he can adapt himself at choice to various styles and types of structure and excel in all of them. In the design for St. Luke's Church the spirit of what might be called static Gothic adaptable for modern church use, where form is suggestive rather than structural, has been expressed with singular simplicity. The interior in particular conveys a fine sense of the quiet and devotional beauty so well expressed in current English practice. Nothing of its kind has been better done anywhere on the Coast.

Not quite so successful is St. Paul's Church in Oakland, though it contains features of much interest, and particularly along lines of structural reasonableness and candor.

Among residences a glance at the few examples shown reveals so much that fills and satisfies the eye completely that one feels that this is, after all, this architect's strongest suit.

The picture of the home on Oak Knoll Terrace leaves nothing to be desired. In setting, composition, detail, material and approach it is beyond cavil. It looks like a perfectly comfortable and beautiful home, without a trace of pretentiousness, yet every wall and mullion of it stamped with distinction.

Of an utterly different type is the residence of banker Carlston. Here again the setting is perfect and the house itself designed in that ultra quiet Colonial vein which by its very simplicity and unobtrusiveness I sometimes think is the real thing, the only thing, for residences. As I have often stated in these columns, most homes have suffered from too much rather than too little architecture. The absolute unconsciousness of this type of square verandahed house has a quality as subtle as the quality of a fine manner as distinguished from the quality of fine manners. Perhaps it is the quality of self-effacement or modesty, which, in spite of Goethe's "nür lumpe sind bescheiden," is, after all, the very finest of all the qualities of men.

* * * * *

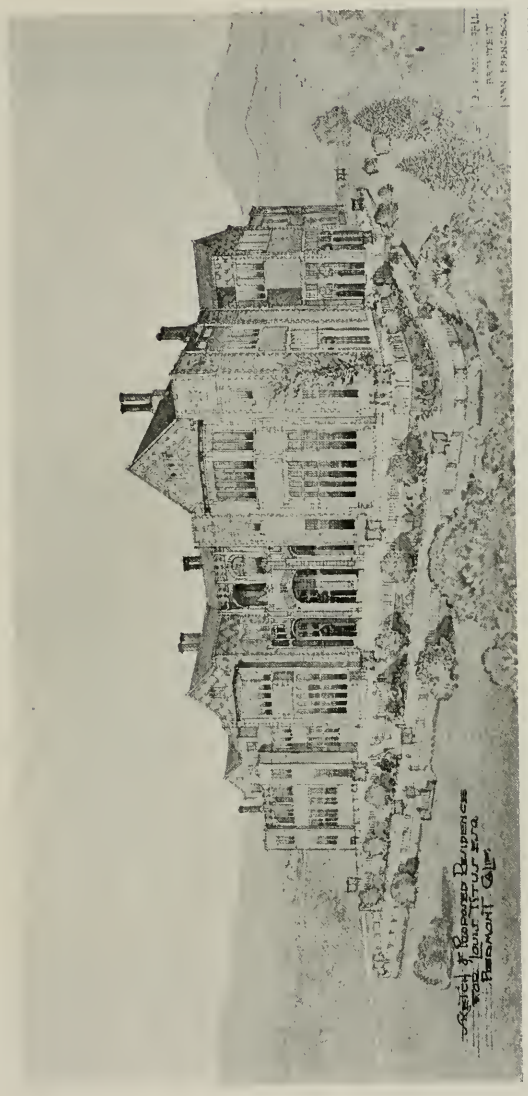
While with the architect himself lies the chief praise or blame for good or bad work done in his office, it is always true that, without competent assistants, the consummation of his dreams would be impossible. In Mr. H. R. Buckingham, chief draughtsman, and Mr. J. S. Nichol, outside superintendent and engineer, Mr. McDougall feels that he has been peculiarly fortunate in this respect.

RESIDENCE, CLAREMONT BOULEVARD, BERKELEY, CALIFORNIA
BENJ. G. McDOUGALL, ARCHITECT

VIEW FROM GROUNDS, RESIDENCE OF J. F. CARLSTON, ESQ., OAKLAND, CALIFORNIA
Benj. G. McDougall, Architect

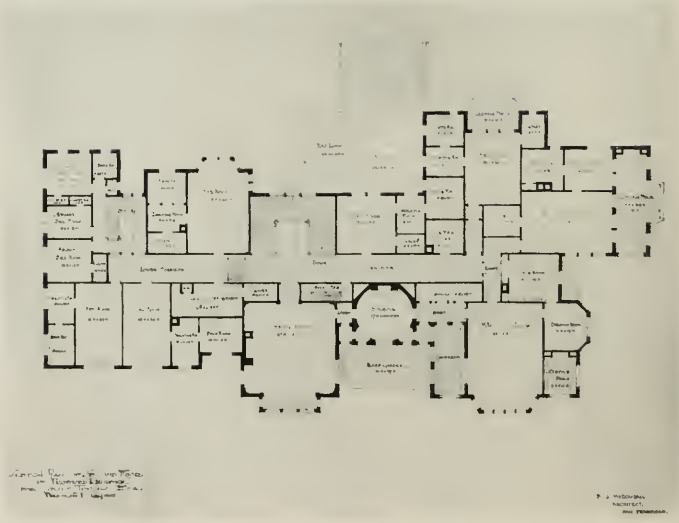
SALON, RESIDENCE OF J. F. CARLSTON, ESQ., OAKLAND, CALIFORNIA
Benj. G. McDougall, Architect

STAIRWAY, RESIDENCE OF J. F. CARLSTON, ESQ., OAKLAND, CALIFORNIA
BENJ. G. McDOUGALL, ARCHITECT



RESIDENCE FOR LOUIS TITUS, ESQ., PIEDMONT, CALIFORNIA
BENJ. G. McDOUGALL, ARCHITECT

FIRST FLOOR PLAN, RESIDENCE FOR LOUIS TITUS, ESQ.
Benj. G. McDougall, Architect



SECOND FLOOR PLAN, RESIDENCE FOR LOUIS TITUS, ESQ.
Benj. G. McDougall, Architect

The American System of House Building

MR. FRANK LLOYD WRIGHT, famous Eastern architect, recently talked before a body of Chicago business men concerning his American System of House Building. This system is being handled in a commercial way by the Richards Company of Milwaukee, but the directing genius back of the plan itself and the designer of all the houses is Mr. Wright. In his talk before the Chicago business men, Mr. Wright said:

"I hesitated a long time before I decided that I would undertake a thing of this nature. It is something I have always believed could be done here in America better than anywhere else in the world. In all of my work from the beginning, I have had faith in the machine as the characteristic tool of my times, therefore an artist's tool. I have believed that this tool put into an artist's hand could be a real benefit to our civilization. I believe that the architecture in America that fails to take into account the machine and modern organization tendencies is going to be of no great benefit to the people. Of course, I know that it is going to take a more subtle art within more severe limitation to build houses beautifully while utilizing the machine. But I believe this effort is the logical conclusion of my studies and my architectural practice.

"I believe the world will find in the American System of house construction, the only instance in the world today of a work which has absolute individuality due to a central idea which is the organic integrity of the work.

"If the whole organization of the plan by which the American models are to be merchandised is worked out in a broad, healthy way, great things will come of it. Naturally, I do not want it exploited like a flash in the pan, nor do I want anything done that will make the plan seem an expedient of the moment.

"The idea back of the American System has been in my head for years. I have guarded it carefully. I wanted time to think in quiet of how the idea might be brought to the public without injury to the integrity of my own art. Any student of design will know that the designs of these houses are not architectural attempts at reform. They are developed according to a principle. They grow from the inside out, just as trees or flowers grow. They have that integrity. The difference between my work and the work of other men is all a difference in grasp and treatment of old principles.

"I do not want any mistake made about this new 'System.' These buildings are not in any sense the ready cut buildings we have all heard of where a little package of material is sold to be stuck together in any fashion. The American System-Built House is not a ready cut house, but a house built by an organization, systematized in such a way that the result is guaranteed the fellow that buys the house. I want to deliver beautiful houses to people at a certain price, key in packet. If I have made progress in the art of architecture, I want to be able to offer this to the people intact. I think the idea will appeal also to the man in the street. Every man would love to have a beautiful house if he could pay for the tremendous amount of waste usually involved in building such a house. The American Plan you see, simply cuts out the tremendous waste that has in the past made house-building on a beautiful scale possible only to the very rich, and any integrity in the result possible only to the especially enlightened individual. Unlimited money has failed there most loudly.

"Somehow in America, architecture has never been appreciated. We are perhaps the greatest nation of house builders in the world, and the most

slip-shod nation of home builders. Architecture has for the most part been let go by the board, because we have had to have buildings, and have them quick.

"The result is that the old log cabin, built in the woods by the frontiersmen, is really much more beautiful than the modern house with all its affectation, fussiness and ugly waste.

"Now, I believe that the coming of the machine has so altered the conditions of home building that something like this American System was inevitable, but I have not borne in mind purely the economical side of it. I would like to explain to you men some of the impulses back of my work in this direction.

"When I, as a young American architect, went abroad, I found many things that astonished me. I expected to find over there a great variety—great interest. I went from one city to another, and for the most part found beauty in the very old buildings only. The Germans who really built German buildings, and the Italians who built really Italian buildings, built beautifully. I naturally came to the conclusion that much of the hideousness in the architecture of modern day was due to the academic 'Renaissance,' that Europe has so nearly standardized. To my mind, the renaissance, although academic, never was organic. And, for centuries, architecture, like other arts, touched by the renaissance, had been divorced from life, divorced from any organic relation of cause and effect.

"Now, when we go back to the old architecture, we find something quite different. The Gothic, for example, was a true style. It was a real architecture. It was an organic architecture. In all of my work I have always tried to make my work organic.

"Now, in America, you understand that we have been all of these years borrowing bad forms. The result is that our buildings have no life, no meaning in them, and if we are ever going to have a living architecture again—an architecture in which there is really joy and which gives joy—we have got to go back to first principles. We have got to go beyond the renaissance to reality, to truth.

"And now there comes a thought which is really back of this whole effort and which to you business men may sound like a highly sophisticated affair. You see, you in America have been led to believe that an artist is necessarily a queer fellow—one divorced from the life about him. The contrary is true. The perfect artist should be a better business man than any of you here sitting before me and he would be if he had time and the need.

"In America, the natural tendency of our times is away from the old handcraft. The railroad locomotive, the great electrical dynamo—these are some of our truly beautiful products—beautiful because of their perfect adaptation of means to ends. Now, I do not believe any architecture in the time of commercialism, of industrialism, and of huge organization, can be real architecture unless it uses beautifully all of these great tools of modern life. And that is just what the American System of building houses proposes to do.

"Of course, I realized the danger in all this. I would not dare go into it if I did not believe I could in the midst of industrialism and commercialism, keep on top with my art. In the designing of all these houses, I have kept close to first principles, but I look with horror at what might easily happen in spite of all the care with which I have handled this matter. I do not want to lose sight of the central idea of using the machine and all modern industrialism to produce beauty.

"Simply selling houses at less cost means nothing at all to me. To sell beautiful houses at less cost means everything. A beautiful house means a finer, better house in every way."

A Modern House of Hopi Architecture

WHEN the first Spaniards explored what is now California and the surrounding states, they found a style of architecture among the Indians which has seldom been equaled for adaptability to environment. The sole idea of the builders was to erect dwellings which should so blend with the surroundings that, even to the keen eye of a hostile Indian, they would be barely distinguishable from the encircling buttes.

Modern ingenuity has taken this old style of architecture and selected a type which, although common to many tribes of Indians, yet presents features saliently Hopi, and patterned after it a dwelling in La Jolla, a small town about ten miles from the city of San Diego, Cal.

The house is built against a bluff which towers, tier on tier, back into the distance, while in the front, the sparkling blue of the Pacific Ocean lends a beautiful tone to the view.

Keeping this environment in mind, a house was designed to be built of stucco in the shades of tan which would match the sands of the bluffs. An original note, not found in the prototype, was introduced in the deep shade of blue which seems to have been stolen bodily from the palette of the ocean to tint the doors and window casings. This same color scheme of tan and blue is carried out in the interior decoration so that nowhere might the hand of man sound a discord in the suggested color scheme of Nature.

Huge beams, hand hewn from telegraph poles, form the floor levels and project beyond the walls.

The house is approached by means of a narrow, irregular flight of stairs, which takes full advantage of the inequalities of the ground so that they might appear impromptu and inconspicuous. Entrance is had high up, almost to the roof, leading into a small hall containing a dressing room on one side and a staircase leading down to two bedrooms, a bathroom and a sleeping porch, which constitute the first floor plan. There is also a separate first floor entrance. The upper hall also leads, by way of two steps down, to a large living room done in plaster and with a front composed entirely of glass windows opening upon a balcony or terrace. Back of the living room is a small kitchen with a tiny bedroom adjoining it. Interior decorations are of Hopi design and various knickknacks of the same tribe lend their picturesque aid to give local color.

The flat roof, so characteristic of this type of architecture, is reached by means of a Hopi Indian ladder, which has one side much longer than the other. A more convenient and equally picturesque ascent can be made by means of a flight of broad steps that go up outside of the house on the opposite side to the regular entrance. A square chimney, huge enough to throw a protecting shade, affords shelter from a too warm sun. The house is intended to perpetuate some of the traditions and architecture of the Hopi Indians who inhabited the deserts of Arizona.

* * *

Work of Mr. Elmer Grey

The architectural work of Mr. Elmer Grey, one of the foremost architects of the Pacific Coast, and who has been practicing in Los Angeles for a number of years, will be shown in the December number of The Architect and Engineer of California. Mr. Grey has written a splendid article on Western Architecture to accompany the forty or more plates of buildings designed and erected under his supervision.

The Tragedy of St. Paul's

By NOBLE FOSTER HOGGSON.

A GREAT building is a great personality. The builder who has not knitted wood and stone and iron and bronze and glass and pigments into a unit of vital character cannot say that he has builded. All really great buildings have within them that harmony of design, material, workmanship, and decorative artistry which make their inorganic substance seem alive. The Londoner who stands for the thousandth time before St. Paul's Cathedral and protests that it "breathes" is giving voice to something more than British pride. He is paying homage to one of the most tragic geniuses that ever gave titanic expression to his own spirit and that of his time.

It was to make visible the spirit of the England of his day that Christopher Wren, one of the greatest builders the world has known, poured his flaming, persistent genius into the fabric of St. Paul's. And because the authorities, as authorities, have done from time immemorial, interfered, after a season, with the builder's efforts, St. Paul's is at once a marvel and a tragedy.

"What building in its exterior form does not bow its head before St. Paul's?" exclaims Dean Milman. "What eye trained to all that is perfect in architecture does not recognize the inimitable beauty of its line, the majestic yet airy swelling of its dome, its rich, harmonious ornamentation? Mr. Ferguson, though sternly impartial and impatient of some defects which strike his fastidious judgment, wrote: 'It will hardly be disputed that the exterior of St. Paul's surpasses in beauty of design all other examples of the same class which have yet been carried out; and whether seen from a distance or near, it is, externally at least, one of the grandest and most beautiful churches in Europe.' But, with the matchless exterior ceases the superiority, and likewise, to a great degree, the responsibility of Wren. His designs for the interior were not only not carried out, but he was in every way thwarted, controlled, baffled in his old age, to the eternal disgrace of all concerned; the victim of the pitiful jealousy of some, the ignorance of others, the ingratitude of all."

Christopher Wren was a builder in the most comprehensive sense of the word. It was in his brain that the designs had birth; it was he who drew the plans, who directed the architectural draughtsmen, and the engineers. His was the genius that organized the forces of craftsmen; his was the all-seeing eye under which the dream became substantial beauty.

The circumstances that defeated and rendered distraught Sir Christopher, the same circumstances to which is due the tragedy of St. Paul's, have been the despair of owners since the art of building was in its infancy—the working of many minds and hands in seeming harmony but in reality at hopeless cross purposes.

He who is to erect a great structure must, first of all, be an artist who comprehends within himself much of the predominant ideals of the society in which he lives. He must also be able to fashion the visible representation of that ideal into a structure unified, harmonious, beautiful, and practical.

* * *

Competition for Fire House

A competition for plans for a $15,000 fire house at San Rafael was held recently by sanction of San Francisco Chapter, A. I. A. Messrs. Edgar A. Mathews and W. B. Faville were members of the jury. Among the competitors were Milton Lichtenstein, O'Brien Bros., Thos. O'Connor, J. W. Dolliver and Masten & Lobet, the latter a new firm of architects with offices in the First National Bank building, San Francisco. They were awarded the commission.

A Plea for Civilization

By E. H. RYDALL, Los Angeles.

THERE is no doubt that the names used in California for localities are a fearful black eye for the interests of the State, with all due consideration to esthetic ideas and the respect that is due the antique. A stranger in dear old Boston, for instance, looking over the map of California, beholds these extraordinary Latin names and draws the conclusion hastily and without reflection that the entire land is a Mexican settlement, where the rebosos are plentiful and at every corner of every street in every village is found an unwashed Mexican playing a guitar to a dark-skinned senorita located on a balcony in some building ornamented with iron bars like a county jail, after the manner of those old edifices so numerous in Spain. It is doubtless proper and politic to keep these dark beauties behind iron bars in those ancient communities, but in America—well, things are different. This stranger in Boston therefore decides to look elsewhere for the investment of his funds, the ultimate of which is that California loses that capital and the presence of that citizen with his interesting family. There is no doubt that if he came from Boston he would be a benefit to the State.

A few of the names in use in California might be wisely abolished and civilized cognomens substituted. Take, for instance, Capistrano, El Toro, Temecula, San Jacinto, El Casco, Cucamonga, La Mirada, Santa Ana (doubtless called after an infamous Mexican general whose name was at one time a soubriquet for cruelty), Laguna, Cerritos, Dominguez, San Luis Rey, San Luis Obispo (relevant of the odor of the cloister), Moreno, San Diego, Los Angeles, Santa Sussanna, Santa Clara, Mojave, San Fernando, Santa Monica, Santa Paula, Pacoma, La Crescenta, La Canada, Puente, Buena Park, Los Amitos, San Gabriel, San Juan, and Tehachapi.

The grasshopper-feeding Indians who occupied California some hundred years ago had doubtless something to do with this last name, Tehachapi, for Christopher Columbus never mentions it in his memoirs. Now, there are plenty of nice names for localities supplied by the Anglo-Saxon race that are now in full use and effect and have been for many years; for instance, Ravenwood, Rushville, Parnell, Parkville, Amherst, Auburn, Beaver City, though there are no beavers in California. But if, on account of the name, the perusing capitalist in Boston to whom we have referred comes this way to cultivate beavers and finds only horned toads, it will be no great loss, for he will likely invest in something else—alfalfa, for instance. Bethany, Brewster, Lincoln, Garfield, Blaine, Grant, Coleridge, Comstock, Danbury, Dorchester, Emerson, Fairmount, Franklin, Riverton (Riverton would be a good name, for we have rivers in Southern California sometimes that cause a lot of damage in winter, but none in summer), Scribner, Springview, Sterling. French names might be used to attract the French—Montreal, Lachute, Paris, La Crosse, Racine; or German, such as Milwaukee and Berlin. There is an immense variety of civilized names familiar to civilized nations that can be selected to ornament these California localities and thus tell the civilized world that a modern people are dwelling here and that capital can be safely invested. Otherwise, with the well-known impression abroad in the world regarding Mexican cutthroats and the experience of Mexico during many years, capital and good sense may hesitate in coming in this direction, for the impression conveyed by the Latin names prevalent here suggests to the civilized mind another Mexico.

Protective Coatings—the Prevention of Rust

By F. W. TURNER.*

RUST, that arch enemy of iron and steel, is the direct result of the action of moisture and air upon metallic iron. Iron and steel manufactured under different conditions, and of different composition, will disintegrate by rusting more or less rapidly. Heat treatment, forging, and rolling, have a great effect upon the resistance of iron to the destructive action of the elements.

Without examining the various theories promulgated as to the why and wherefore of the phenomena of rust, it is a truth to say: that rust does not occur if moisture and oxygen are absent; that acids stimulate rusting; that alkalis prevent or inhibit rusting; and that certain metallic salts of chromic acid such as lead and zinc chromates, lead oxides, and treated iron oxides, have a marked tendency to retard or check corrosion. Iron and steel protected from the action of moisture and oxygen, or immersed in strong alkali water, which prevents electrolysis and hydrolysis, will not rust. It is a simple matter then to prevent rusting by excluding air and moisture.

This can be done in a greater or lesser degree by such methods as case hardening or heat treatment of the iron itself, by nickel and copper plating, by galvanizing, or by excluding the air and moisture with various coatings of paint.

As the result of research and practical test, the paint industry is possessed of the most advanced information regarding paints for metal protection, and for this purpose there are manufactured anti-rust products which have, under test, given excellent service for years. It is now generally conceded that the prevention of rust depends upon the application of a paint containing pigments which do not excite corrosion, either through the presence of acid impurities or electro-negative tendencies. Pigments must be used which actually prevent corrosion either on account of their basic nature or chromate content. Of all the pigments experimented with by the American Society of Testing Materials, lead chromate, in the form of American vermilion, and red lead stand out as the best commercial pigments suitable for priming coats on iron and steel. There are certain mixtures of treated iron oxides and also mixed lead and zinc pigments which give favorable results under certain conditions.

For underground pipes and iron subjected to acid mine waters, black compounds of Gilsonite with treated oils and gums have proved to be the cheapest and best. Sometimes the pipes are heated and dipped, and in the case of water pipes, etc., underground, it has been found that a wrapping of cheap muslin or other fabric, and a second coat of waterproofing helps the strength of the paint film. These black coatings should be waterproof as well as non-conductors of electricity.

The inside of iron tanks for water storage should be given one or two coats of pure red lead ground in linseed oil and thinned down with boiled linseed oil. Very little thinner, if any, is necessary, because there is no need for penetration. Two coats of the black waterproof paint referred to as a coating for pipes are now applied, care being necessary to follow the manufacturers' directions and to obtain a paint that will not taint the water, if used for drinking purposes. The outside of these tanks, like the inside, should be given two coats of red lead paint, and then two coats of a pure mixed paint of the color desired.

*The author of this article is Chemical Engineer for W. P. Fuller & Company, San Francisco.

Strong alkalis are perfect rust protectors. Iron imbedded in concrete need not be covered with paint at all, for the alkaline reaction of the concrete will keep the iron clean and bright so long as it is completely surrounded by the concrete.

The best of paints or other coverings will fail unless the surface has been properly prepared. All rust must be removed, the surface perfectly dry and free from grease, and as smooth as possible. Sandblasting is the best method of preparing the surface of iron and steel for the reception of any protective paint, although cleaning the surface to be painted with wire brushes is perhaps the most popular. A little time and labor spent in cleaning the surface to be painted will be repaid many times over by the increase in the efficiency of the applied covering, be it zinc galvanized, black waterproofing, or inhibitive mixed paint.

The treatment of galvanized iron with copper acetate solution prepares the surface to receive thoroughly inhibitive paints without the danger of peeling. Tin roofs and copper flashing should be cleaned thoroughly with benzine or benzole before the red lead or iron oxide inhibitive paints are applied.

* * *

Engineers and Architects

The activities of the architect and the structural engineer are related in many respects. In large modern buildings there is a tendency to consider not only the design from a purely engineering standpoint, but also to regard its architectural effects and its relation in a general scheme of city planning and improvements. The same applies to bridge construction, where the bare and ugly structures are being abandoned for the more ornamental and more graceful designs, but quite as correct from every engineering standpoint. This has called forth from the structural engineer his best efforts to cope with the problems of ornamental and architectural art. Engineers as a whole realize their lack of knowledge of the rudiments of architectural design and this has meant the co-operation of architects and engineers in the planning of these ornamental structures. This has a disadvantage, possibly, in that it creates a tendency for each to unduly emphasize his own share in the work and real co-operation is often lacking. There is a call for a person combining the abilities of both architect and engineer, and by slight readjustment, engineering schools should be able to supply this lack. Heretofore, they have not, as a rule, striven to sufficiently broaden their courses, but by the exercise of judicious care in the elimination of old and substitution of new subjects, there is here an opportunity for giving engineering students such an insight into the fundamentals of art and architectural design as will fit them for such work of this nature as they will come in contact with.—Exchange.

* * *

Judges for State Competition

The architects selected to serve on the jury which is to judge the competitive plans for the $1,000,000 State building, to be erected in the San Francisco Civic Center, are James W. Reid of Reid Bros., San Francisco; Edgar A. Mathews, who was a member of the jury in the Sacramento Carnegie Library competition; Bernard Maybeck, designer of the Fine Arts Building at the Panama-Pacific International Exposition; Robert D. Farquhar, and John C. Austin, the last two of Los Angeles. From these five three will be selected to serve on the jury.

FIG. 1. PLANT OF PACIFIC COAST SHREDDED WHEAT COMPANY, OAKLAND
HOBART & CHENEY, ARCHITECTS H. I. BRUNNIER, C. E

Pacific Coast Shredded Wheat Factory

By H. J. BRUNNIER*

THE Shredded Wheat Company of Niagara Falls, organized the Pacific Coast Shredded Wheat Company, and built a large factory at 14th and Union streets, Oakland, Cal. On account of the large western business, they located on San Francisco Bay, for the convenience and saving in transportation, and will supply all the territory west of Denver. The plant was located on the edge of the residential district, and on the main car lines for the convenience of their employees and visitors. They have a social hall, rest rooms and first aid emergency hospital equipment to stimulate healthy co-operation and sociability among their employees, and pleasant reception and rest rooms for guests. They have spared no expense to make their plant a show place of the Pacific Coast factories, and visitors are always welcome. While the building has been finished for some time, the plant will not be in operation until about January 1st, on account of the delay in receiving machinery from the East due to the war conditions.

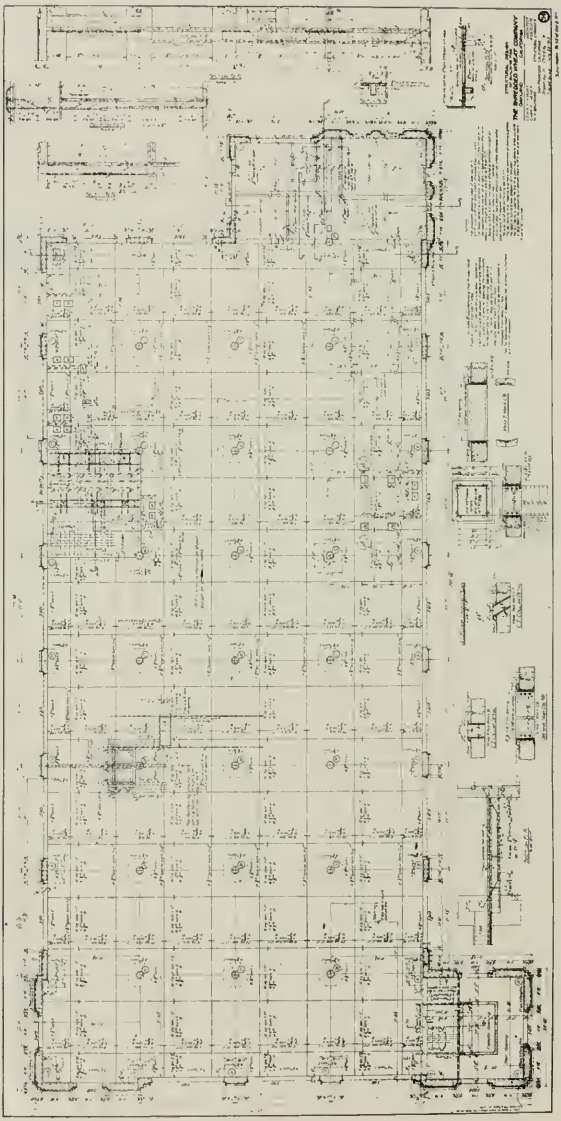
The plant consists of a group of buildings located on artistically laid out grounds covering two city blocks. The wheat is received in cars from a spur track of the Key Route R. R. System, dumped into a hopper, and from which it is taken by a screw conveyor into the scale house. (See drawing 4.) It is then hoisted by bucket conveyors to the elevator head house; (see drawing 5) and from here taken by screw conveyors to various bins for storage. As required for manufacturing, the wheat is drawn out from the bottom of the elevators to a tunnel running under the bins, and by a screw conveyor, it is taken to vertical bucket conveyors, which again hoist it to the head house, where by screw conveyor, the wheat is taken to the main building, cleaned and stored in auxiliary concrete bins on third floor and running through fourth floor. (See drawing 1.)

The wheat then goes through the various processes of manufacture, and the finished product is again loaded on to cars from the shipping platform, between the main building and scale house.

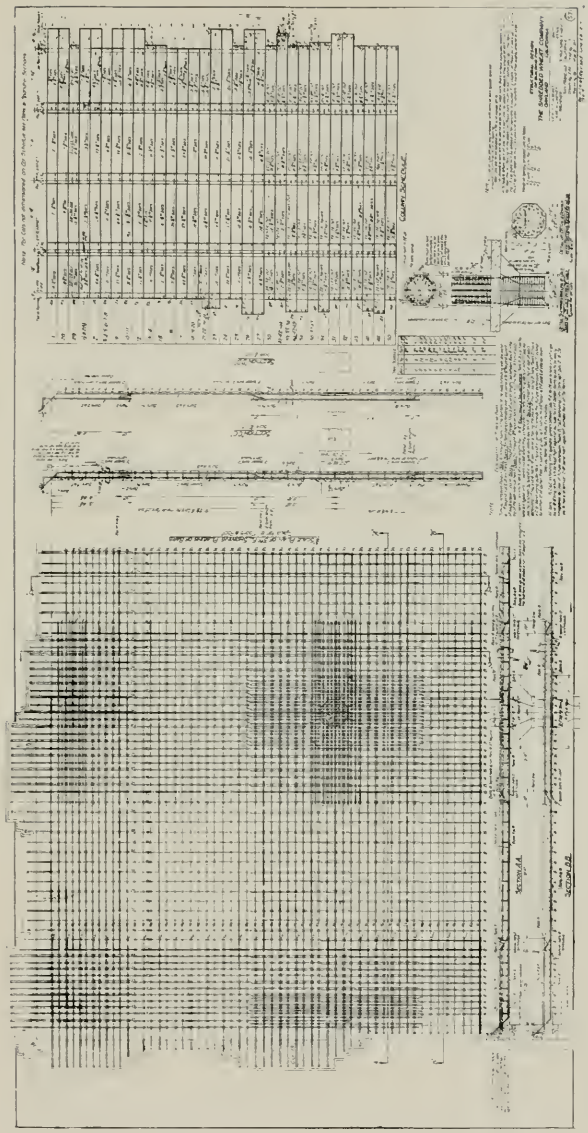
Drawing No. 1 shows the fourth floor framing plan, which is typical of the others. The reinforcing was divided into panels by two ¾" spacer bars directly over each other; one in top and the other in bottom of slab. Besides acting as spacers, the bars take stress, and by their distinction of two bars thus placed, made the panel lines clear; even after all the other bars were in place. They were of great advantage in simplifying the placing of steel, and made easy checking up in the field. Drawing No. 2 shows a large detail of floor panel, and is the key to the floor plans. All floors sloped 2" from center of building to exterior walls and scuppers were placed in the spandrels. All openings in floors had a raised collar around them to prevent water from flooding floor below. On account of accurate spacing of holes in floors being necessary, two datum lines were formed at right angles to each other. These lines were carried from floor to floor by means of 3" diameter plumb line holes in slab; which, later on, were filled up with concrete.

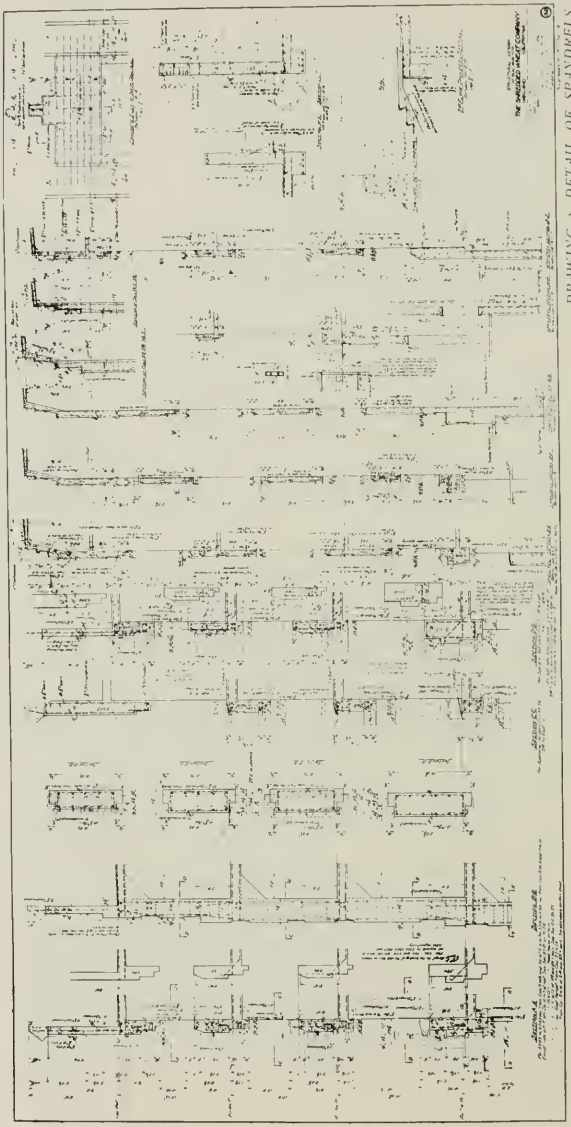
The stairs are reinforced concrete. The stairways and elevator shafts were placed in a panel and shut off from balance of building by concrete or tile partitions with automatic fire doors. Drawing No. 3 is the details of the spandrels and pilasters showing how the terra cotta trim is attached to the concrete frame and the details of concrete in the exterior walls.

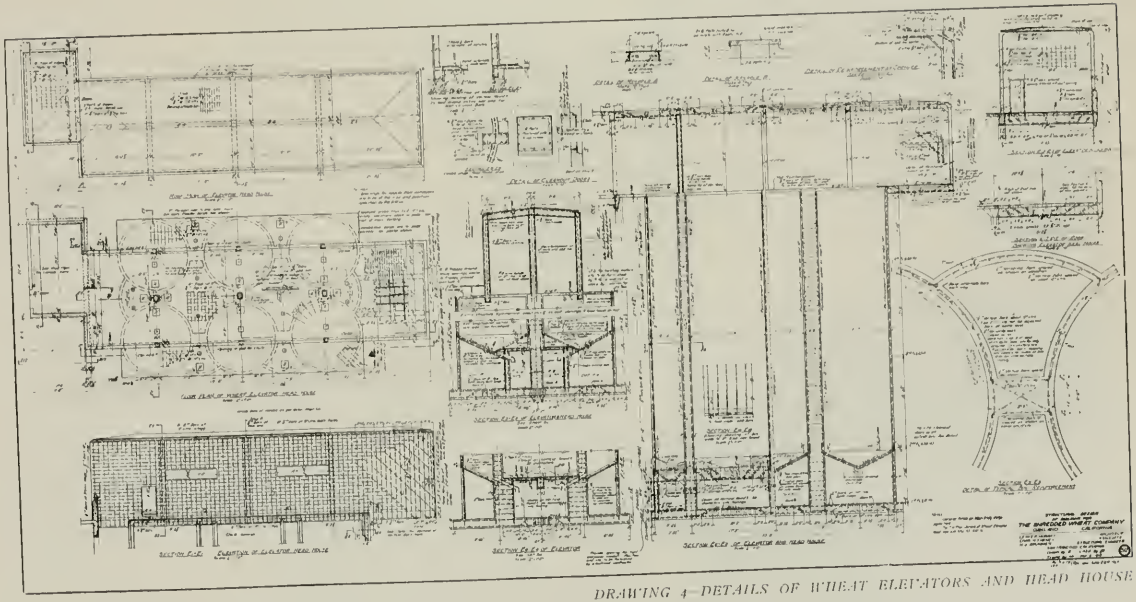
*Structural Engineer of the plant.



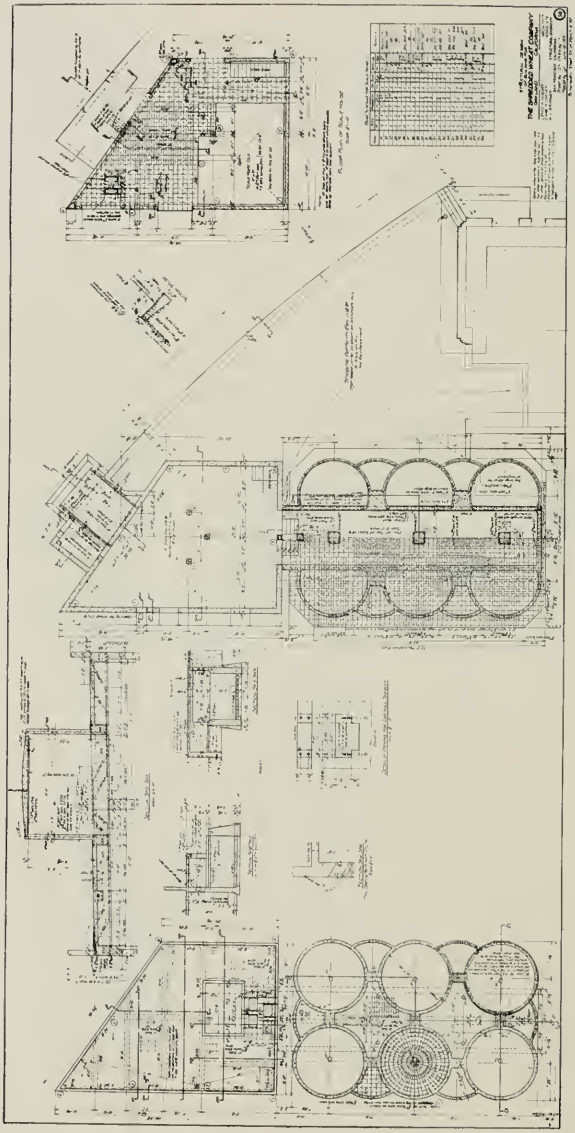
DRAWING 1—FOURTH FLOOR FRAMING PLAN, TYPICAL OF ALL FLOORS



DRAWING 2 KEY TO FLOOR PLAN

DRAWING 5—DETAIL OF SPANDRELS



DRAWING 4—DETAILS OF WHEAT ELEVATORS AND HEAD HOUSE



DRAWING 3—DETAILS OF SCALE HOUSE

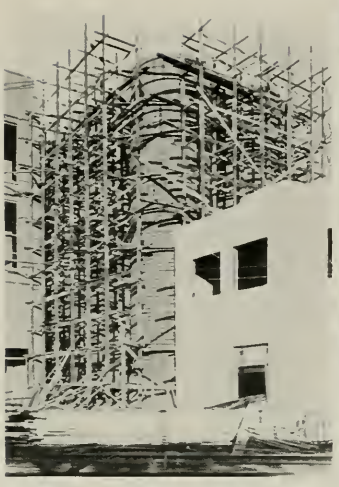


Fig. 2

Fig. 3

Drawings No. 4 and 5 show the details of construction of the wheat elevators, elevator head house, and scale house. The main bins are circular and use is made of the interstices between these, making a total capacity of 60,000 bushels. The bins are supported on a solid reinforced concrete mat foundation. The elevator head house is supported on the bins and hoisting machinery is in the overhanging end. The walls are designed as a cantilever girder to support this. The wheat elevators were made water-tight by plastering the exterior with "gunite" by use of the cement gun. Figure No. 2 shows how the elevators were constructed by forming up the inside of tanks, placing the steel, and the outside was as a movable form 4 feet deep, and raised after each successive pouring.

Figure No. 3 shows the contractor's plant and the method of forming. Figure No. 1 is a view of the rear of the plant, showing the main building, grain elevators, head house, scale house, boiler house and sprinkler tank.

Five thousand nine hundred cubic yards of concrete and 375 tons of reinforcing steel were used. All the concrete work was done by the Clinton Construction Company, for $80,900. The buildings complete cost $175,000, and total investment, buildings, equipment, etc., was $400,000.

Hobart & Cheney are the architects.

* * *

Addition to Red Cross Hospital

Lewis P. Hobart of San Francisco has been commissioned to prepare plans for a $100,000 addition to the Red Cross Hospital at San Mateo. The cost of the improvements will be met by Mrs. Whitelaw Reid, whose philanthropy made possible the construction of the first unit of this hospital several years ago. On the hospital grounds a new rectory for St. Mathew's parish will also be constructed from plans by Mr. Hobart, and a little later it is intended to build a new parish house. All of these buildings will be designed in the Gothic period.

The Owner, the Architect and the Engineer

By OTTO E. GOLDSCHMIDT, Consulting Engineer, New York,
in The Modern Hospital.

IN former years, when our wants were small, it was a simple matter to build a house. A man thus disposed would look about in his particular community and engage a reliable carpenter, to whom he would express verbally his simple plan of the house he wished to construct, and the carpenter would develop this mental plan a little further in his own mind, or perhaps even draw a little sketch of what he thought was wanted, and proceed to construct his building. In those days the architect was unknown.

As time went on and the demands and the wealth of the community increased, the man who wished to build a larger building to meet his demands found that it was to his advantage to employ a man who was specially trained and familiar, not only with carpentry, but also with mason work, plastering, hardware, etc., and who had some knowledge of plans and of costs. In those days the contractor was both builder and architect.

Under this procedure the owner soon found that the builder or contractor did not always fulfill his promises—that work did not always stand up as it should, it would show defects and omissions, extra charges came up which should have been foreseen and avoided, and which were excessive and difficult to check; all of which not only brought about endless disputes and unpleasant relations, but, worst of all, unsatisfactory results in the building which must serve the purpose for which it was built for many years. All of these troubles were caused by bad planning, a lack of proper study, improper supervision, etc. Furthermore, under this system the artistic side, to say nothing of the most economical construction, was entirely overlooked, and the results spoke for themselves. Actual competition under this system was out of the question..

On the next development the owner finds that it is to his advantage to engage a man, called the architect, to develop his mental picture of the building under consideration, and amplify it and present it in the form of carefully studied plans, in which changes and alterations can be made without cost, and all details can be carefully developed and studied before the work is executed. These plans, together with the specifications, can then be given out to various builders for estimates and actual competition can be obtained, as all builders are estimating on the same construction. There is no opportunity for excessive profits to the builder, and, with the regular and honest supervision on the part of the architect or his superintendent, the work is executed in a dependable and businesslike manner as provided by the plans and specifications. The owner is relieved of the responsibility of an immense amount of details, and gets the results which he wished to obtain at a lower cost than could be produced in the old-fashioned manner. The contractor has made a reasonable profit and is content, and is pleased to have satisfied both owner and architect.

With the tremendous progress of the age, our buildings have grown from the modest homes, institutions, or business buildings, one or two stories in height and covering only small ground areas, to the gigantic office and hotel buildings from twenty to fifty stories high, to hospitals and similar public institutions housing thousands, and to industrial plants employing vast numbers of men and women. The development and construction of these vast enterprises is entirely due to the tremendous progress of the engineering sciences.

The demand for the tall building was met by the structural engineer by an entire revolution in the art of building construction, together with development of the present elevator. But, in all of our modern buildings of whatsoever nature, the engineer becomes more prominent every day, for it is through the development of our modern systems of heating and ventilating, of electric lighting and power distribution, and the systems of water supply, plumbing, and drainage, that the comforts demanded above all things are supplied. Without these comforts our modern buildings would be impossible.

Our modern buildings, therefore, are far different from the simple cottage or home which required only a single trade—the carpenter—to construct, but instead require the employment of a vast number of different trades and, in addition, the sciences of architecture, of structural, mechanical, electrical, and sanitary engineering.

Naturally the vast expansion of the building requirements have greatly increased the demands on the architect, and, in place of a single man now being able to handle the problems which arise during the planning and construction of the building, the architect must have an experienced and highly trained organization, each member of which has specialized in the various lines, such as architectural design, building construction, foundation and structural engineering, heating and ventilating, electrical engineering and sanitary engineering.

The contractor also expands, and now becomes the general contractor, with many subcontractors under him, who handle the work of the different trades, including those of an engineering character.

In the business arrangement for the construction of one of these large building projects, the relations of the owner, the architect, and the contractor remain as before, but a new factor enters here in the form of the engineer, or engineers, to assist the architect in these specialized branches. That such engineering services are essential is readily admitted by anyone who has had any experience in the building lines, but how they should be best obtained and arranged for is a question which has already gone through a considerable transition, and unfortunately has as yet not entirely become a fixed practice. Many men trained both scientifically and practically in their particular engineering branches have entered this field and devote themselves exclusively to the consulting work.

Just as in those days before the architect had come into his own, when an owner would ask a contractor about the advisability of employing an architect, he would receive the information that an architect was a useless ornamentation and of no practical value, and, further, would only cost him (the owner) money; that he, the contractor, would take care of all the plans and such work as the architect usually provided, at no cost to the owner. We all know what was the lamentable result of such arrangements.

Today we have in many instances practically the same thing, except that the architect now steps in between the owner and the contractor. The proceeding is something like this: The owner makes a contract with the architect to furnish all plans and specifications, and to supervise the building under consideration. This includes all engineering services of whatsoever work may be involved, and is based on the usual architectural fee for compensation. The architect starts his working plans, and, as formerly was done by the owner, so now the architect calls on one contractor in each of the structural, heating and ventilating, electrical, and sanitary lines to assist him to prepare his plans and specifications. These contractors, eager for

the advantage for obtaining contracts in their lines given them by such an opportunity, usually prepare these plans and specifications without cost to the architect in dollars and cents. In most cases, however, the plans and specifications prepared under this arrangement are not only hastily prepared without proper study, but, far more important, they are prepared so that, while to the uninitiated, which frequently includes the architect, they appear perfectly fair and open, actually they are arranged so as to give the contractor who prepared them a decided advantage over his competitors, who naturally are forced to figure on these specifications and dare not criticise them to the owner or architect for fear of injuring his standing. In most cases the contractor who prepared the plans and specifications obtains the contract for this work—sometimes because his estimate is below those of his competitors, sometimes because the architect will offer the work to him at the figure of the lowest competitor, and sometimes because the architect will even induce the owner to award the work to him at a price above the lowest estimate received on account of special recommendation by the architect. In almost every case he is sure to get the contract, and, when it has been awarded to him, let us see what becomes of the position of the architect.

1. If the contractor had to cut his price, and naturally he had to figure the cost of preparing the plans and specifications as a part of the cost of the job, the architect still feels under obligations to him for rendering him this service, and the contractor will readily take advantage of this situation if he finds any evidence of it.

2. The architect, not being able himself to prepare the specifications and plans, while able to interpret them in a general way, cannot be expected to interpret the technical details and requirements, and must therefore depend on the contractor for such interpretation. Such interpretation would naturally be biased, and, in short, the contractor is in a position to interpret his own specifications. Omissions, reductions in weight, and the cheapening of the quality of material can readily be accomplished as long as the installation in itself is one that will operate or stand up. Of these changes the architect will have no knowledge.

3. If changes or additions to the original work come about, the architect has no one in an unbiased position on whom he can depend to check the estimated charges for such changes or additions.

4. Where a mechanical plant of some considerable size is required, including boilers, stokers, engines, electric generators, hot water heaters, refrigerating machinery, and the many electrical devices, as is the case in our modern hospitals, hotels, and large office buildings, the architect, who can be expected to have only a general knowledge of such equipment, would be completely lost unless he had someone with whom to consult who is thoroughly familiar with this form of apparatus, without having a direct monetary interest in the recommendations he makes therefor. The owner can always buy such apparatus direct from the manufacturer at the same price as it would be sold to the contractor. If purchased, therefore, through the contractor, he must expect to pay a profit of from 5 to 15 per cent to the contractor for handling this equipment, though the owner gains nothing thereby, and all that is demanded of the contractor is that he transfer this part of his contract to the particular manufacturer. He may, however, go even further and "shop" this equipment, and purchase it of a make or type which is inferior in quality and less in cost, but to the architect would seem the same or equal to that specified and originally figured in the estimates.

On this basis, in every case, though he may not realize it, it is the owner who pays the bill, and, while he thinks he is paying only his 5 to 6 per cent for architectural and engineering fees, he is really paying a considerable additional sum for engineering services without getting the results to which he is entitled for the money so spent. The architect is not only saving for his own pocket the fee which would have been demanded by a reputable consulting engineer, but clearly has transferred such charges in a manner not discernible to the owner who pays the bills.

A concrete example of this method of operating was experienced by the writer a short time ago, which will serve to demonstrate the methods in use. This architect, having experienced some of the depression in the architectural business of recent times, concluded that on a certain job of moderate size he would dispense with the services of a consulting engineer and therefore made the usual arrangement with a firm of contracting engineers to prepare the plans and specifications for a certain part of the work, instructing them generally as to the character of the work wanted. The architect had had many years of business relations with this firm of contractors and had given them previous to this time a very considerable amount of work, and he had therefore the fullest confidence in them. The contractors were one of the largest and most prominent in their particular line, and had executed some of the largest contracts in this country. The plans and specifications were duly issued for competitive figures. One of the contractors who received the specifications had shortly before this time executed a similar piece of work, which had greatly pleased the architect, and had brought forth special commendation, and had been informed by him that a similar job was wanted. Much to the amazement of this contractor, he found the specifications issued entirely contrary to this statement. He therefore took it on himself, based on the architect's remark, to send in an alternate estimate based on the character of the work as previously executed on the particular job referred to by the architect. When the bids were received they all ran between $7,500 and $8,000, except the alternate, which amounted to $5,500. Fortunately for the architect, the owner did not get to see these figures. The contractor who had prepared the specifications was called in and at once instructed to modify his specifications, which he agreed to do, and they were again sent out for revised estimates. The figures returned were only slightly below those first submitted. The architect, thereupon realizing the position in which he was placing himself before the owner, called in the writer to go over the plans and specifications as prepared and to revise them according to good practice. It was found that the specifications had been what is commonly called "loaded"—that materials were specified that were ridiculous for the class of service, but very high in price, and would never have been installed by the contractor who prepared the specifications, for substitutions would have been absolutely necessary. It was found that certain specialties were called for, but that the data supplied was so meager that the one manufacturer specified was the only one in possession of the necessary conditions on which to quote, and his price, of course, was very high, to say the least. Other material was so specified as to absolutely eliminate the possibility of competitive prices, and the manufacturers specified were not slow to see their opportunity. The writer modified the specifications and plans according to good practice, and actually added to the equipment so far as results obtained by the owner, and the job was let for a little over $5,000—a difference of $2,500 to $3,000 for engineering services, to be paid for by the owner, without his knowledge of course, but still paid for by him, when it should not have cost him one-

tenth of that amount in the regular way, and, as the architect had agreed to furnish these services, it should not have cost him anything, which was finally the case.

The writer does not claim that all work handled in this manner as between architect and contractor is proportionately as expensive to the owner, but does claim that it is fundamentally a bad business arrangement which invites such practice, and cannot be expected to give satisfactory results to any of those concerned.

The architect cannot always be held responsible for resorting to this method, as the many changes in construction of buildings in our modern times have placed more and more responsibilities on his shoulders, and made greater demands of him daily without any material compensating effect in increased fees. In many instances he is, therefore, forced by the owner to resort to these means.

Many of the most prominent and reputable architects have recognized the fallacy of this method, and regularly employ consulting engineers for the various lines. Only a few of the largest firms are able to maintain a competent staff of engineers regularly on their force. Unfortunately some architects claim to have such a staff only to deceive the owner, and actually are dependent on the contractor for their information, or their staff in these lines is so lamentably weak that little can be expected of them.

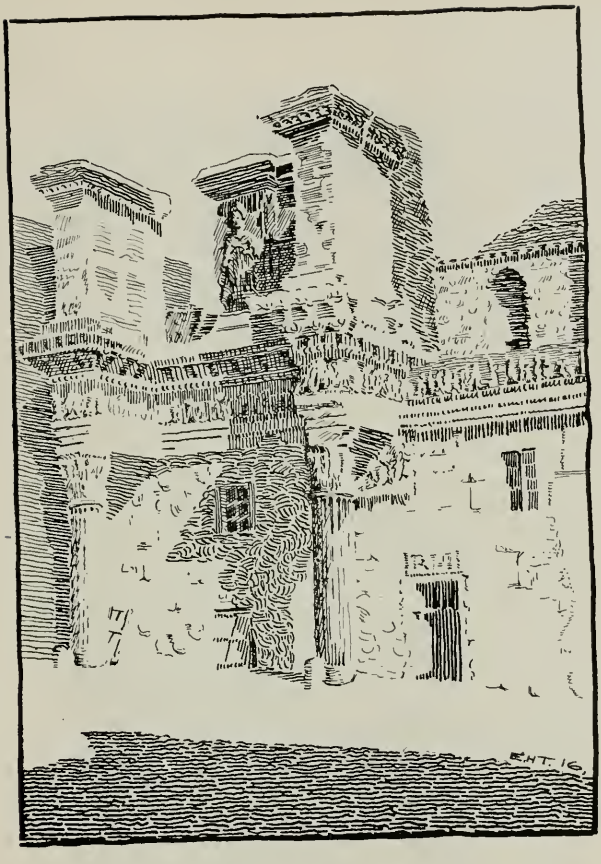
It seems very evident that the average architect cannot afford to maintain a staff of competent engineers to handle the work of this character which comes to his office for the reason that this class of work should be done only by men who have specialized in their particular lines, and have had such technical training and practical experience that they command salaries which the average architect cannot afford to pay.

It would seem, therefore, that the consulting engineer independently established, just as the architect did many years ago, must become a part of all building operations of any size, and this transition is now under way. It would seem, however, that no owner who is arranging a contract for a building operation of any size with an architect should authorize such an arrangement or sign such a contract without having definite knowledge of how and by whom the engineering features of his project are to be handled.

Generally, it is preferable that the consulting engineers work under the direction of the architect, so as to have no division in the responsibility of the head and absolute unity of action, but frequently the owner reserves the right to select such consultants or pass on their acceptability.

As to the fees to be paid for such services, it is generally considered, and properly so, that where a building operation involves a considerable amount of engineering, the owner pay in addition to the now generally established architectural fee an additional fee to cover this engineering expense. Where architects are forced to a certain amount of competition, this is frequently lost sight of, and then the various means already described are resorted to, or incompetent and inexperienced engineers are employed, with the usual lamentable results for which the owner has to pay in the form of extras, changes, or in coal, electric current, and water bills for many years to come.

It is, therefore, equally important to know that your engineering work is in competent hands as it is to know that your architect is competent, and the same qualities of ability, honesty, and integrity must be sought for in the engineer that have been sought for in the architect. Without these, no confidence can be established, and without confidence no man can do his best work for his client.



Temple of Minerva

The above charming pen and ink sketch is by a Los Angeles student, who writes in explanation of his efforts as follows:

"I am sending under separate cover a pen and ink sketch entitled 'Temple of Minerva, Athens, Greece.'

"It has occurred to me that many architects, engineers, contractors and others would enjoy seeing again the ruins of this temple.

"I served my apprenticeship of two years under the late Frank E. Kidder and am now in the City Engineer's office, Los Angeles.

Yours truly,

EDWARD H. TATUM."

STAGE FROM THE AUDITORIUM, WITH SWIMMING POOL IN DISTANCE. OUTDOOR THEATRE, ESTATE OF GEORGE G. BOOTH, ESQ., CRANBROOK, MICHIGAN
MARCUS R. BURROWES, ARCHITECT

A Private Outdoor Theatre

THE private outdoor theatre in connection with country estates is comparatively new in American architecture. One of the first in California was designed a number of years ago by Lewis P. Hobart, San Francisco architect, at Bakersfield. A most interesting example of the private outdoor playhouse has just been completed on the estate of George G. Booth, Esq., Cranbrook, Michigan.

Situated in the heart of the beautiful Bloomfield Hills district of Oakland County, Michigan, and set on the highest point of ground on the estate, the theatre affords a wonderfully impressive view of the surrounding country, particularly when seen through the openings at the rear of the stage. The planting around the building has been most carefully planned by Mr. Booth and his associates so as to afford a proper setting for the building and to harmonize with the surroundings. An arbor vitae hedge about eight feet in height is carried about the seating on the side of the hill and extends down both sides of the swimming pool.

The plan of the buildings includes the seating, stage, swimming pool and dressing rooms. The circular stone seating is set into the side of the hill, similar to the method adopted in early classic theatres. Directly in front of the seating is the stage with small dressing rooms at either end, and a pierced wall forming the back. Directly behind this is the swimming tank, which is surrounded on all sides with a concrete and brick pavement. At the north end of the pool is placed a bathhouse with dressing rooms for men and women.

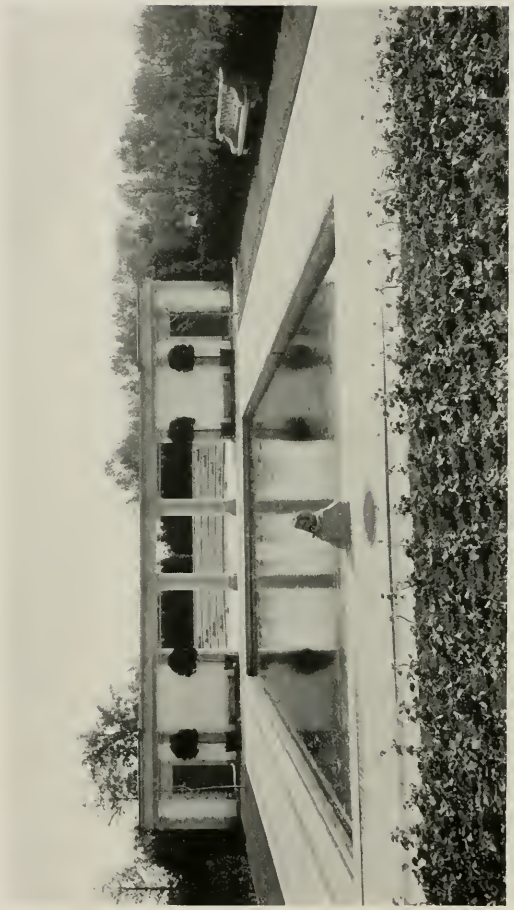
The buildings are extremely simple in design and color. The detail and ensemble are inspired by early Greek architecture. The design of the pilaster caps and cornices is taken from some of the better-known examples of archaic Greek work.

Cement stucco and Bedford limestone are used throughout. The buildings consist of concrete blocks plastered with Portland cement mortar containing a small percentage of lime. The cornices, pilasters, columns, etc., are of Bedford limestone finished with a rubbed surface. The seating is built of Bedford stone slabs supported by stuccoed blocks. The roofs of all buildings are constructed of concrete slabs reinforced with rib bars. Red roofing tile are laid over these slabs.

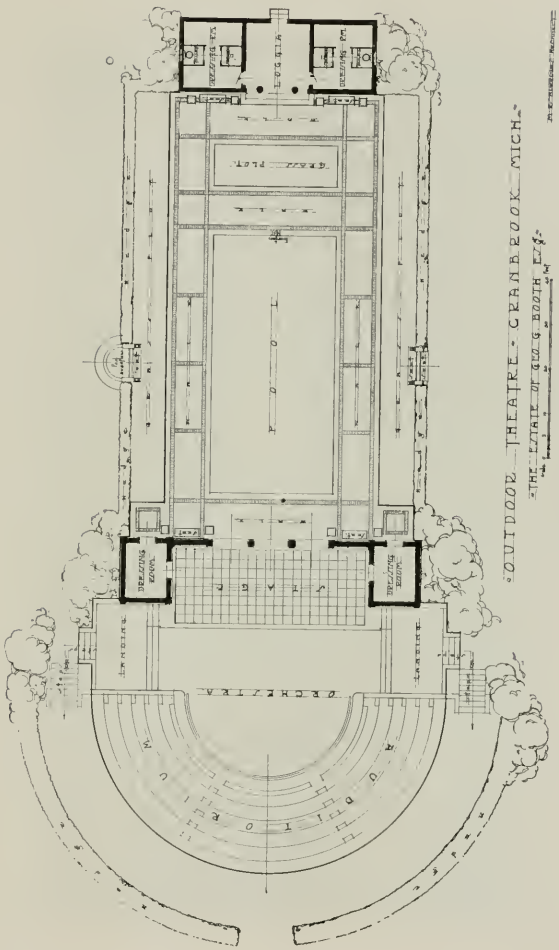
The swimming pool, which is seen through the pierced wall in back of the stage, is built with monolithic concrete walls. This pool is supplied with filtered water from the main supply tank on the premises, and the overflow is carried down over a succession of small platforms to the lake at the foot of the hill.

The accompanying photographs and plan are shown by courtesy of Modern Building and they give an excellent idea of the attractive appearance of the theatre. Performances have already been given in the playhouse with great success.

The architect of this work is Marcus R. Burrowes, Detroit, Mich.



LOOKING ACROSS SWIMMING POOL TOWARDS OUTDOOR THEATRE
ESTATE OF GEORGE G. BOOTH, ESQ., CRANBROOK, MICHIGAN.
MARCUS R. BURROWES, ARCHITECT



GROUND PLAN, OUTDOOR THEATRE, ESTATE OF GEO. G. BOOTH, ESQ.
MARCUS R. BURROWES,
ARCHITECT

REAR OF STAGE, OUTDOOR THEATRE, ESTATE OF GEORGE G. BOOTH, ESQ., CRANBROOK, MICHIGAN
(Note Provision for Overflow from Pool Shown in Foreground)
MARCUS R. BURROWES, ARCHITECT

ANOTHER VIEW OF THE STAGE, SHOWING BEAUTIFUL EFFECT PRODUCED BY THE SHRUBBERY PLANTING.
OUTDOOR THEATRE, ESTATE OF GEORGE G. BOOTH, ESQ., CRANBROOK, MICHIGAN
MARCUS R. BURROWES, ARCHITECT

BATH HOUSE, OUTDOOR THEATRE, ESTATE OF GEORGE G. BOOTH, ESQ., CRANBROOK, MICHIGAN
MARCUS R. BURROWES, ARCHITECT

Third California Conference on City Planning

By CHARLES H. CHENEY, A. I. A.,
Architect and City Planner, Secretary of the Conference.

THE Third California Conference on City Planning, recently concluded at Visalia, was particularly notable for the able discussions held, and for the prevailing emphasis upon the importance of the social and economic side of city planning as well as upon the perhaps more attractive esthetic considerations. Although the attendance was not large the ten most important out of the eighteen City Planning Commissions of the State had present one or more representatives, whom it was hard to restrain, in their eagerness to have their own particular problems discussed.

The foremost problem of all the cities seemed to be the question of zoning or districting. The general desire to provide a plan for protecting homes from the intrusion of apartment houses, flats, business, nuisances and industries brought out much discussion of the new Berkeley Zone Ordinance. The city attorney of Berkeley, Frank D. Stringham, in a paper on "The Police Power and Its Application to Districting and to Excess Condemnation," took a conservative yet most hopeful view of the probable attitude of the courts toward further extension of the city's use of this power. Many recent decisions were quoted which seemed plainly to show that the higher courts are becoming more and more liberal in their recognition of community rights versus individual rights. There was evident a much wider interest and understanding on the part of all present, on districting as a means of housing protection. A general and marked advance in ideas seemed to have taken place since last year's conference.

Chester H. Rowell of Fresno summed up the methods of city planning attack, and legislation needed, in an address in which he declared that there were three things necessary to do to make the American city grow in an orderly and healthy fashion. The first of these is proper public acquisition power or what is sometimes called the right of excess condemnation, for which in California a constitutional amendment is required. The second is the early adoption of a comprehensive and well thought out zone or districting system. The third is a system of extensions of the city outside its limits by planning for future growth in some such way as the Germans do by condemning farm lands for future city use. "When this is done the millenium will not have arrived, but we shall have become partially civilized," he said.

A proposed legal method for the establishment of uniform building setback lines from streets was brought out by William J. Locke, Secretary of the League of California Municipalities. He suggests that a system be adopted similar to that in street proceedings providing for the resolution of intention, publication of notice, hearing of protests and assessment of damages and benefits over the district benefited in order to meet the requirements of "due process of law." It was brought out that the establishment of such set-back lines brings about great protections to public health and safety. Also, by requiring all buildings to set back a given distance from the street, the city can anticipate necessary future widening if traffic in the future should increase to any great extent so as to require it.

President Duncan McDuffie of the Berkeley Civic Art Commission (in reality a city planning commission), presided at a session devoted to the problems of the City Planning Commission. As most of the eighteen planning boards in California have been established within the last few months, they are still trying to find themselves, and many of them seem to be floundering without any constructive program.

Discussion brought out that the commission should first determine and list what are the vital problems of the community as to street plan and improvement, transportation, park system, zoning, civic center, etc. It should then select two or three of the most urgent of these and confine its investigations to them. It was agreed that if the problems were vital enough there would be no difficulty in securing appropriations from the city council or funds from a group of citizens. Mr. McDuffie pointed out that the City Planning Commissioners generally have knowledge of conditions but are not experts and that the commissions which are accomplishing definite and constructive things are those which call in a consulting expert on city planning.

In a characteristically forcible address at the Annual Round Table Luncheon, Professor Thomas H. Reed, city manager of San Jose, made evident that the only real authority a city planning commission has in this State is to pass on plans for new subdivisions, with the veto power, which is a negative function. The great positive functions of these boards are to initiate and present well thought out plans and suggestions for orderly civic improvement. City councils dare not take any initiative to speak of because of their political character.

Charles F. Stern of the State Highway Commission pointed out how the motor traffic of the State has doubled in the past three years and will undoubtedly double again in a like period. He showed that the increasing use of the motor car is breaking down all city limits, pushing the city far out into the country, thereby increasing enormously the demands for city planning and the extension of city conveniences to a heretofore undreamed-of distance.

"The Relation of Parks and Playgrounds to the City Plan," discussed by Professor J. W. Gregg, President of the Berkeley Park Commission, is one of the most important and necessary of early study in the preparation of proper breathing and open spaces for the city. Charles Dudley Warner said that "literature is the foundation of all human existence." Professor Gregg disagrees and says, "Landscape or gardening is the foundation of all human existence. It surrounds us from birth until death."

"A Home-made City Planning Exhibit and Its Results," was explained by Dean George A. Damon, Throop College of Technology, Pasadena. His graphic charts of where the tax money goes, where the assessed valuations are high and the blighting influence upon them of most of the railroad-owned property in the city, provoked great interest and discussion. The fact that seven per cent of the taxpayers paid over half the annual taxes and that half of all the taxpayers in his city paid less than twenty-five dollars each for the city's support annually, gave an interesting sidelight on who pays the bills for improvements and whom to educate.

The conference unanimously decided to recommend the following legislation to the State Legislature at its session next January:—

Extension of the State Housing laws to include a more comprehensive and stringent tenement house act; the regulation of all types of dwellings; the establishment of a bureau under some existing commission similar in function to the work of the Massachusetts Homestead Commission to supply information and encouragement to all the city planning commissions of the State; asking the submission at the next general election of a constitutional amendment for the Public Acquisition Power (sometimes called Excess Condemnation); passage of an act further strengthening the power of cities to restrict the building of flats and tenements in single family resident districts; and passage of an act permitting cities to establish building set-back lines.

The officers elected for the ensuing year are as follows: President, F. C. Wheeler, Councilman, Los Angeles; Vice-President, Duncan McDuffie, President Civic Art Commission, Berkeley; Vice-President, Thos. H. Reed, City Manager, San Jose; Secretary and Treasurer, Charles H. Cheney, Architect and City Planner, San Francisco.

* * *

Steel Houses for Soldiers

An interesting scheme is at present being discussed in connection with the building of large numbers of portable houses for the war zone. Certain of the Allied Governments are negotiating with manufacturers for the designing and building of these shelters, which, though intended to be temporary in character, must be durable and complete enough to accommodate family life for an indefinite period. Originally inquiries were put out for vast quantities of lumber from which to construct these houses, but it was found this material would make the cost excessive, and the plan was dropped. Now it is proposed to employ steel construction, which, if a uniform design is adopted, can be produced in great numbers at a minimum cost.

The proposed houses are to be 12 by 24 feet in ground dimensions and 9 feet high. They are to contain two rooms. A plan now designed calls for the use of a framework of light channels and a covering of 26 to 28 gauge galvanized sheets or some other un-inflammable material. Each of these structures will contain about a ton of steel. If this type is adopted the aggregate steel requirements will be enormous in view of the great numbers required. France alone has been considering the ordering of 100,000 houses, and the other entente powers are expected to order in equal proportion.

The houses are to be used both to shelter the soldiers at the front and to provide comfortable accommodations for the general inhabitants in devastated territory until the final reconstruction work in these districts can be safely inaugurated.

* * *

Paper Mills to Use New Woods

As the result of studies which have been made at the Forest Products Laboratory on methods of handling wood chips suitable for paper pulp, it is announced that Wisconsin paper companies are now negotiating with the railroads for shipment to their factories of experimental train loads of chips of Western woods adapted to paper making.

Previous investigations by the Forest Service have demonstrated that good grades of paper can be made from a number of Western woods. The experts now estimate that some of these woods, when cut into chips and dried and baled, can be delivered to the mills in Wisconsin at a very small advance over the cost of chips made from local timber. If a favorable freight rate can be obtained, they say, the great quantity of pulpwood on the National Forests should prove to be a considerable factor in supplying favorably located paper mills with the necessary raw material. In Wisconsin alone, it is stated, there is an annual market for over 300,000 cords of pulpwood.

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY

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Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers dis laim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION

(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. XLVII. NOV., 1916 No. 2

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THE ARCHITECT'S PAY

The question as to whether or not architects overcharge for their services is one in which the building public is vitally interested and concerning which there is much ignorance and misinformation.

Reputable architects do not charge more than their services are worth. The minimum commission fee of 6 per cent, recognized by the American Institute of Architects, is not exhorbitant. Any fee charged by some of the disreputable architects—of whom there are most unfortunately too many—is exhorbitant; because, not only out of proportion to the services rendered, but virtually graft or plain robbery.

By reason of his theoretical education and practical training any architect worthy of the name is able to save for his client as much as, or more than, the amount of his fee. And then his initiative in suggestions and his creative ability can give to the owner whose building he designs those details which mark the difference between a mere house and an ideal home.

The established charge is recognized as being a proper minimum charge, and architects are perfectly justified in charging a higher fee for certain classes of work where the problems involved are more difficult than are found in the ordinary classes. This is especially true in the case of monumental work, where the special character of the building is determined by a high quality of design in the original conception rather than by the overcoming of peculiar difficulties in construction. This is a comparison and a distinction that it is hard for the average owner to see, perhaps because overcoming difficulties in construction is more spectacular than overcoming difficulties in planning and artistic composition.

Yet it is quite commonly thought, says the Building Review, that architects are highly paid for what services they render, and the employment of an architect is still held by many owners to be an expensive luxury. This is among the many examples of that

false economy which shortsighted people practice in building as well as in other transactions, proving to be the most expensive thing in the long run.

FAIR JUDGMENT PROMISED IN STATE COMPETITION

In connection with the California State building competition, the question has been frequently raised by competitors that inasmuch as there is to be a double judgment there should be some plan followed by which the jury shall not become informed of the real authorship of the drawings till after the second or final judgment. Writing to the Architectural Adviser, one competitor says:

> The evident intention of the program is to have the second stage similar to an invited, anonymous competition. But as the same jurors are to serve for both stages, the individual distinctions which are to be expected in the eight successful schemes will practically identify them with their authors, especially in the minds of those jurors who are architects. Hence, unless proper arrangements are made, the final judgment cannot be strictly anonymous.

To avoid this difficulty it is suggested that the jury and the architectural adviser take measures *not* to identify the credentials or cards with the competition drawings submitted in the first stage. This may easily be done, since drawings and credentials are to be judged independently, and the program does not require that the jury shall personally open the envelopes and credentials and thus learn the authorship of each individual scheme or design.

A letter from Mr. McDougall, the architectural adviser, states that it is the purpose of the jury to proceed along the lines stated above.

ANENT THE PROPOSAL TO LICENSE BUILDERS

"The proposal to license builders and superintendents, as a means of preventing disasters such as the recent collapse of a new tenement house in the Bronx, is open to serious question," writes D. Everett Waid.

"Its adoption would involve the creation of an additional piece of municipal governmental machinery which would be costly to operate. It would introduce one more complication in the already complex operation of building, and add another burden of cost to building.

"If the department organized to examine and license the many thousands of men engaged in the structural design and erection of buildings should be an efficient organization, it would inconvenience and hamper the building world seriously.

"If it should be less efficient than it ought to be, it would actually increase the dangers it is intended to obviate. Hundreds of poorly equipped constructors would secure badges of competency which would obtain for them greater opportunities than they would otherwise have to do bad work for the public.

"In the work of structural design and erection of buildings many thousands of people in New York City alone are engaged, and that with innumerable gradations and variations of functions. Any attempt to license would tend to make more difficult and complicated the execution of work on a just basis and would be most likely to result as class legislation of the most vicious sort."

THE QUEBEC BRIDGE FAILURE

The new bridge across the St. Lawrence river at Quebec is apparently doomed to bad luck. The fall of the suspended span before arrival on its permanent supports on the ends of the two cantilevers, while serious in its consequences in loss of life and property and a source of heavy expense and loss of time in replacing the span, is no such indictment of the bridge engineering profession as was the former failure of one of the great cantilevers while under construction. That failure involved a complete re-design and reconstruction of much of the bridge.

The reconstruction on the new design has progressed to the point of closing the opening between the projecting ends of the cantilevers with an ordinary truss bridge supported on those ends. This truss had been completed, floated out on barges under its proposed final position, hung from the suspender links from the cantilever ends above, and lifted a few feet on its way up to its place in the bridge.

It is supposed that one of the cast blocks which were bearings for pin connections of the ends of trusses at right angles to each other broke and thus threw the weight of the structure upon two diagonally opposite points of support, there being four such points in all. The accompanying motion threw one or more of the truss ends out of the stirrups in which they rested. The unequal stresses, for which no provision had been made, caused the collapse of one or more of the panels of the trusses, and the whole span fell into the river, carrying with it the men at work upon it.

While the loss is by no means as serious as that in the first accident, it is said that it will cost some $600,000 and a year's time to replace the truss and mount it in position.

American Architects to Compete

American architects have been invited by the government of Australia to participate in an international competition in designing the federal Parliament House at the new capital city of Canberra in Australia and the date of closing the competition has been extended to January 31, 1917.

American Institute of Architects

(ORGANIZED 1857)

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

The Palo Alto High School

(From Southwest Contractor, Los Angeles.)

Architects Allison & Allison have for the second time been selected as architects for the proposed union high school buildings at Palo Alto, Santa Clara county. They were first selected about two years ago, but no attempt was made at that time to vote bonds for the project and it was allowed to rest. Since the project was revived recently the Palo Alto newspapers have given space regularly to discussions relating to the selection of an architect. Various organizations, from the Chamber of Commerce to the labor unions were alarmed over the prospect of Los Angeles architects securing the job. All the work would go to Los Angeles, it was contended; local contractors would not understand the plans and they would have no chance against southern competitors. And out of the hubbub came a most remarkable procedure. The school trustees called a committee of local contractors and submitted to them a typical set of working plans and specifications furnished by three architects under consideration with a request that the contractors examine the plans and pass judgment upon them. The contractors after due deliberation reported that the best plans were those made by Allison & Allison. With such plans to figure from the contractors were certain they would have a square deal in the bidding and the trustees gratefully accepted their judgment.

Architects' Chapter Committees

J. E. Allison, president of the Southern California Chapter of the American Institute of Architects, has appointed the following standing committees to serve for the ensuing year:

Chapter Membership—F. Pierpont Davis, chairman; H. H. Martin, Winsor Soule.

A. I. A. Sub-Committee on Public Information—S. Tilden Norton, chairman; H. F. Withey, A. R. Walker.

A. I. A. Sub-Committee on Competitions—A. F. Rosenheim, chairman; Myron Hunt, George E. Bergstrom.

Ethics and Practice—H. M. Patterson, chairman; A. B. Benton, O. W. Morgan, Jr.

City Planning—H. F. Withey, chairman; A. C. Martin, Sumner Hunt, J. T. Vawter.

Institute Membership—A. F. Rosenheim, chairman; John C. Hillman, W. S. Hebbard.

Entertainment—J. C. Austin, chairman; Lyman Farwell.

A. I. A. Sub-Committee on Education—R. D. Farquhar, chairman; S. C. Clements, D. C. Allison, Elmer Grey, R. C. Farrell.

Contracts and Specifications—George E. Bergstrom, chairman; A. C. Martin, F. L. Stiff.

Special Committee on Building Companies—Percy A. Eisen, chairman; J. P. Krempel, Robert H. Orr.

Architect Sues Client

John J. Foley, architect, with offices in the Maskey building, San Francisco, has brought suit to recover $6,242.71 from Francis J. Sullivan, brother-in-law of United States Senator James D. Phelan, as fees for plans for the home for Carmelite Nuns at Santa Clara, which was provided for by Alice Phelan Sullivan, the Senator's sister, in her will.

Foley prepared plans as provided for in the bequest, but all contracts were rejected by Sullivan on the ground that they were too high. Mahoney Bros. are said to have submitted the lowest bid for about $120,000.

Later the work of making the drawings was given to Messrs. Maginnis & Walsh of Boston, whose plans were only recently sent out here for figures, the bids being taken through the office of Albert M. Caldwell, who is to act as resident and supervising architect when the work is started.

New Sacramento School

It is stated that within thirty days plans will be completed and bids called for for the construction of the new school house at Sacramento in the block bounded by Seventeenth, Eighteenth, E and F streets. Messrs. Shea & Lofquist, San Francisco, are the architects. Building is to be modeled after the William Land School, now being completed in Sacramento, and which was designed by the same architects. The estimated cost is $200,000.

Bids Wanted for Trees, Shrubs, Etc.

Bids will be received by the Supervising Architect, Treasury Department, Washington, up to 10 a. m., December 4th, for planting trees, shrubs, etc., on the grounds of the Federal buildings at Albany, Eugene, Pendleton, The Dalles, Ore.; Idaho Falls, Idaho; Bellingham, Everett, Walla Walla, Wash.; Chico, Grass Valley, Pasadena and Santa Barbara, Cal.

Not Competitors

Editor The Architect and Engineer of California.

We beg to call your attention to an error in your October issue, referring to the Merced and Palo Alto high schools, in which you state that our firm was among the competitors.

This is not correct, as we do not enter competitions unless conducted in accordance with the Competition Code of the American Institute of Architects.

While we are being considered with the two architects named for the Palo Alto high school, the board is not holding a competition.

In reference to the Merced high school, we were invited to compete with the other architects named, but declined because no program had been approved by the Institute's sub-committee on competitions.

We trust you will correct this error in your next issue.

Thanking you for same, we remain,

Respectfully yours,

ALLISON & ALLISON.

Since receiving the above the Palo Alto Board of Education has appointed Messrs. Allison & Allison architects for the proposed new school building, the estimated cost of which is $100,000. The Los Angeles hrm has also been appointed architects of the Merced school, which is to cost $135,000, exclusive of furnishings and equipment. The building probably will be constructed of hollow tile and brick.

American National Bank Building

George W. Kelham, Sharon building, San Francisco, has been commissioned to prepare plans for a bank building to occupy the site of the old California Safe Deposit and Trust Company building on the southeast corner of California and Montgomery streets, San Francisco, for the American National Bank. The lot is 60:9x137:6 and was recently transferred to the Merchants Exchange by H. U. Hind. The Merchants Exchange in turn has sold the property to the American National Bank. It has not been fully determined how large a building will be put up.

Fresno Office Building

Fresno is to have a new six-story Class A store and office building. Mrs. Nellie Mason of New York will erect the building at a cost of $165,000, to replace the old Mason Block on J street.

The plans of Eugene Mathewson, Fresno architect, have been accepted.. The new building is to be of steel and brick construction, with two elevators, steam heat, vacuum cleaning and all modern conveniences.

Engineer Designs "Eveready" Factory

Maurice C. Couchot, C. E., has completed plans for a four-story reinforced concrete factory building to be erected at Eighth and Brannan streets, San Francisco, for the Eveready Dry Battery Company. The site, while 275 feet square, will be only partly built upon for the present. The building will be 100x275 feet, with a one-story wing. Construction will be reinforced concrete walls, floors and roof, freight elevators, automatic sprinklers, steel sash, etc. Building will cost in excess of $100,000.

C. A. Meussdorffer Busy

The office of C. A. Meussdorffer, Humboldt Bank building, San Francisco, reports considerable work on the boards and in prospect. Contracts have been awarded for two five-story brick buildings for Mr. N. Wood and Mr. A. L. Peyser, on the north side of Jackson street, west of Franklin street. Each building will contain ten apartments of seven and eight rooms each and will cost $142,000.

For the lot adjoining these buildings Mr. Meussdorffer is preparing plans for A. W. Wilson for an eight-story Class B fireproof reinforced concrete building, each floor to be devoted exclusively to a nine-room apartment with three baths. Cost approximately $105,000.

At the northwest corner of Jackson and Franklin streets Mr. Meyer Wood will erect a seven-story Class B fireproof building on a lot 40x127:6, each floor to contain one apartment of nine rooms and three baths. Cost about $110,000.

Mr. Meussdorffer has also made plans for a three-story frame apartment building for Mr. D. H. Green and Ray G. Saalfield, to be built on the southwest corner of Pacific avenue and Franklin streets, San Francisco, at a cost of $36,000.

$1,000,000 to Be Expended at Avalon

The Santa Catalina Island Company has completed arrangements for improvements to be made at Catalina Island. A trust deed in the sum of $1,000,000 has been executed in favor of the Security Trust and Savings Bank of Los Angeles for the purpose of financing the improvements. Since the fire at Avalon, which destroyed the Metropole Hotel and other buildings, only temporary structures have been built. The plans of the Banning Company are said to contemplate the construction of a summer resort on a magnificent scale. Hunt & Burns, Laughlin building, Los Angeles, have prepared preliminary plans for a hotel at Avalon.

Bungalow and Garage

August G. Headman, new Call building, San Francisco, has prepared plans for the completion of the upper story of the pathological ward building of the San Francisco City and County Hospital. Mr. Headman has also made plans for an attractive bungalow, garage and gardens at Claremont for Mrs. Blanche Whiteside. The improvements will cost $10,000.

Cover Design Competition

A competition for a cover design has been arranged by the publishers of this magazine. A number of prizes will be offered for the best poster effect in two colors. The competition is open to any architectural draftsman in California. There is no fee attached nor will a competitor be required to subscribe for the magazine. Full details will be mailed on application—a two-cent stamp to be enclosed for return postage. Address "Editor Architect and Engineer of California, Foxcroft building, San Francisco."

The competition will close January 2, 1917, and judgment will be made as soon after that date as possible. The jury will be composed of three architects and a representative of The Architect and Engineer. After judgment, the drawings will be placed on exhibition at the Building Material Exhibit, 77 O'Farrell street, San Francisco.

$60,000 Mission Home

A. B. Benton of Los Angeles has prepared plans for a twenty-room Mission style residence to be built on West Adams street, in the 3200 block, for Dr. E. A. Bryant. The house will be frame construction with plastered exterior and Mission tile roof. In order to make deep reveals in the windows and doorways and give a masonry effect, the building will be constructed with double walls. The house will cost about $60,000.

Hollow Tile Hotel

Messrs. J. M. Cooper and W. Douglas Lee, associate, of Los Angeles are preparing plans for a brick and hollow tile hotel building to be erected at Palmdale, in the Antelope Valley. Mr. Cooper has designed a number of buildings of various kinds for Palmdale during the last few months, most of them of hollow tile construction.

New Store Building for Tulare

E. J. Kump, Rowell building, Fresno, has been commissioned to prepare plans for a new fireproof building to replace the one badly damaged by fire recently at Tulare. The owner is the Linder Hardware Co. The new building will be of fireproof construction, either one or two stories in height, and will cost $30,000.

$40,000 Business Building

Lawrence Myers, Foxcroft building, San Francico, has purchased the full 50-vara lot (137:6x137:6) on the northeast corner of Pine and Franklin streets, San Francisco, for approximately $40,000. A three-story business block to cover the entire lot is planned. It is understood Mr. Myers will spend in the neighborhood of $60,000 on the improvements. MacDonald & Kahn are the designers and builders.

Brick Factory

R. D. King of Los Angeles has plans on the boards for a brick factory building for the R. W. Pridham Company. The building will be on the site of the Union warehouse, which was recently damaged by fire, and the walls of the warehouse, which are still intact, will be utilized. The building will average about 200x300 feet ground dimensions. Mr. King has also prepared plans for a one-story brick commercial garage to be built at Eleventh and Figueroa streets for Melville Dozier.

Paper Box Factory for Berkeley

A site has been secured by the Carlton & Huiskamp Co. of Seattle at Dwight way and Parker, Fifth and Sixth streets, West Berkeley, for a box factory. Ground has been broken for the first unit of an immense plant 186x272 feet. The building will be of brick, with concrete floor, saw-tooth roof and metal sash.

Nine-Story Apartment House

G. A. Applegarth, Claus Spreckels building, San Francisco, has prepared preliminary plans for a nine-story Class A apartment house, the location of which and owner's name are withheld for the present. Building will have a 50-foot frontage and depth of 137:6, and will contain high-class apartments of seven or more rooms each. It is estimated that the building will cost close to a quarter of a million dollars.

Carnegie Library

Messrs. Allison & Allison of Los Angeles have forwarded the plans for the Carnegie library building at Calexico to the Carnegie Corporation for final approval. Plans for this building were completed months ago, but progress has been delayed by difficulties encountered in securing a site. The building will cost about $10,000.

Addition to Coffee Plant

Frederick Whitton, manager of construction, is designing and will superintend the erection of a four-story brick addition to Hills Bros.' coffee factory at Howard and Fremont streets, San Francisco. An estimate of $100,000 is placed on the work.

New Officers of Oregon Chapter

Oregon Chapter, American Institute of Architects, has elected the following officers for the ensuing year: President, Joseph Jacobberger; vice-president, J. A. Fouilhoux; secretary, W. C. Knighton; treasurer, Folger Johnson; trustees, Ion Lewis, M. H. Whitehouse.

Busy Times Ahead

Indications point to some lively times in the building line in San Francisco during the coming months.

Willis Polk has a $40,000 garage for Van Ness avenue.

Messrs. MacDonald & Kahn have a like structure for Mr. Myers, to be erected on the same street.

B. G. McDougall has a class A office building to be erected next to the Sub-Treasury building on Pine street for the Aetna Insurance Company. The Federal bank may occupy the ground floor.

Messrs. MacDonald & Kahn are designing an eight-story reinforced concrete office building to cost $200,000.

Bliss & Faville have a $50,000 residence for Jas. E. Walsh at Broadway and Buchanan streets.

The P. J. Walker Company will build the new Stanford University library at Palo Alto, the estimated cost of which is $500,000. Bakewell & Brown are the architects.

Reid Bros. will design a ten-story Class A office building for Captain William Matson on Main, near Market street, San Francisco. The building will be especially fitted up for the shipping interests. Probably $250,000 will be expended on the improvements.

Licensed to Practice

At a meeting of the California State Board of Architecture (Northern District), held on September 26th, the following were granted certificates to practice architecture in this State: Howard E. Burnett, E. N. Curtis and Gertrude Comfort. The following were granted certificates at the meeting held on October 31st: John F. Beuttler, J. Newton Holden and R. R. Irvine.

Concrete Warehouse

Messrs. Kahn & McDonald, constructing engineers, Rialto building, San Francisco, will erect a four-story concrete warehouse in the Mission district of San Francisco for the Goodyear Rubber Company. The estimated cost of the structure is $75,000.

Episcopal Rectory

Lewis P. Hobart of San Francisco has completed plans and let contracts for the construction of a rectory at San Mateo for St. Mathew's Episcopal Church. It is designed in the Gothic period, with cement plaster exterior and slate roof. It will cost $17,000.

Example of Good Building Construction

Last month there was celebrated the twenty-fifth anniversary of the completion of the Catholic Cathedral on Van Ness avenue, San Francisco. An inspection of the work has shown the thoroughness and care with which the edifice was constructed.

It was situated on the very verge of the fire zone, the east side of the street having been completely devastated by the flames.

The damage from the earthquake was comparatively slight, the plastering suffering most.

The contractors for the basement were O. E. Brady and James W. Smith and for the superstructure Mahoney Bros. and McGowan & Butler.

The entire work was carried out under the supervision of Thomas J. Welsh, architect, now of the firm of Welsh & Carey.

The School Site

Unfortunately, the architect and contractor are rarely consulted on this important matter, though both of them might give invaluable advice. Walter H. Killiam, a prominent school architect, says in a recent issue of Brickbuilder:

> Much of the current American school architecture seems to ignore the fact that a schoolhouse is an educational institution, and not a political monument.
>
> In the smaller cities a spirit of civic pride often impels the authorities to select a conspicuous site and give the building an unduly important character, but the practice of placing school houses of any sort upon main thoroughfares is unwise. Not only is there an ever-present danger to small children from swiftly passing automobiles and trolley cars, but the noise and dust are extremely objectionable, as well as the exposure of the children to miscellaneous traffic on their way to and from school. It is far better to locate the school on a quiet side street, where land is cheaper and a commodious playground can be easily provided.

Highway Engineer Promoted

Arthur E. Loder, division engineer of the California State Highway Commission for the last five years, has resigned to accept the post of assistant chief engineer of the United States Office of Public Lands, with headquarters at Washington, D. C..

In his new office Loder will be one of a corps of expert engineers who will have charge of the construction of highways in national forests, for which Congress recently appropriated $85,000,000.

Prior to becoming division engineer of the State Highway Commission, Loder for four years was chief engineer of the Los Angeles County Highway Commission. Before coming to California Loder was connected with the United States Office of Public Lands at Washington, D. C.

Electrical Department

Church Window Flood Lighting

By A. O. DAVIS in Lighting Journal.

How it was done is most helpful to those who are seeking exact information. Mr. Davis describes in excellent detail the successful illumination of an art glass church window using two flood lighting projectors with incandescent lamps.—Editor.

SINCE the introduction of flood lighting many unique applications for the use of this type of unit have been found.

There is a large field for just this kind of installation in the lighting of stained glass windows in churches, memorial buildings, etc.

The particular window here described is in the Central Presbyterian Church, Newark, N. J.

Throughout the country there are many windows similar to the one in question, but doubtless few people realize the amount of work and thought necessary to produce the effects so beautifully portrayed in many of these large stained glass windows. The subject of the window above referred to is "The Ascension." The dimensions are approximately 18 feet by 22 feet and the cost was about $2,500.

The first process in producing these art glass windows is the making of a design for composition and color scheme, then a cartoon full size and from this in turn an outline transfer which is cut into sections, of the size and shape of each piece of glass. This pattern is then fitted together and pasted on a large plate glass, upon which has been traced the outline. This glass, which is technically called an easel, is then raised against the light. Each section of the pattern is then removed and a piece of glass is selected and cut to take its place. These pieces are fastened to the easel by means of wax. When the glass is all selected the pieces representing the flesh, face, hands and feet are painted on two or three thicknesses of glass and burned in a gas kiln, then fitted into their places. Finally the glass is removed from the easel and glazed and leaded. In a window of this kind the effect of light and shadow is obtained by the unequality of the surface of the glass, which varies in thickness or by placing several thicknesses of glass one upon the other or sometimes by both means. The leads are so arranged as to help the drawing. The glass used is opalescent, in many cases made especially for the work in hand; the artist having the glass completely under his control in form, color and texture.

By illuminating windows of this character from the outside their beauty may be enjoyed during the evening service as well as at services held during the daytime, and, while it is hard to beat old "Sol" as an illuminant, we think in some respects the detail of color derived from proper artificial illumination is even more pleasing. The position of the units as shown in the sketch was found to be the most advantageous in this particular case. This, however, is a matter to be determined by local conditions.

This method, as you will see, does away with the unsightly appearance of reflectors, etc., attached to the building and the window frame. The number of units necessary depends on the nature of the window as to color and thickness. By placing the units on the side and projecting the beams at an angle, more surface can be covered and by crossing the beams the intensity may be increased at the center of the window, which, in this case, was necessary on account of the color in the center figure. Because of the great absorption of light by the colored glass in this type of window, it is necessary to have a rather high intensity projected on it so that sufficient light is transmitted to show up the beautiful colors and designs. With the two units placed as here shown,

FIG. 1. *Exterior of Central Presbyterian Church, Newark, showing effect of flood lighting lamps on art glass window.*

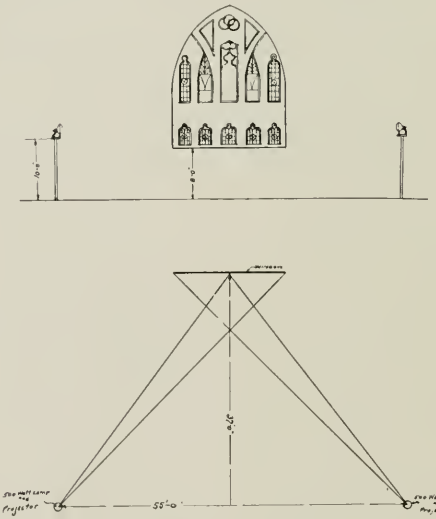

FIG. 3. *Elevation and plan diagram, showing relative positions of projector units and art glass window.*

Fig. 2. *View of illuminated art glass window from the interior of the church.*

Courtesy of Lighting Journal.

the average intensity would be about 18 foot candles, the units being 500-watt concentrated filament lamps. This arrangement also overcomes any shadows which might come from the mullions. These mullions, in many cases, are four or five inches thick.

The height of the units from the ground is determined by the position of the window. As is shown in the illustration, Fig. 2, the units in this case were placed on a 10-foot post, which allows the direction of the rays to enter the building at an angle out of the line of vision of the audience. Units should be placed on a separate circuit with control switch conveniently located, so that they may be turned on or off any time during the service. Where a building is surrounded by trees the units may be placed so as to practically conceal the source of light from almost any angle of approach, giving a very pleasing effect on the outside from the distance.

America's Electrical Week Plans

The first meetings of many city committees, appointed in 268 towns and cities to manage local celebrations of "America's Electrical Week," have been held and in most instances reported to Mr. J. M. Wakeman, general manager of the society, the entire personnel of these committees were present.

The Coast cities particularly are off to an early start, as is evidenced by big meetings held in Seattle and Spokane. Seattle, at the first meeting of the local committee, decided to conduct an Electrical Show. Mr. M. C. Osborn, new president of the Northwestern Electric Light and Power Association, reports that Spokane will also have an Electrical Show, where special emphasis will be placed on moving exhibits.

Reports from Aberdeen, Northern Yakima, Hood River and Walla Walla show strong activities in behalf of the

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Week. General Manager Davidson of the Pacific Power and Light Company has advised the society that he will want material for branch offices of his company in these cities.

The Portland, Ore., committee presided over by Franklin T. Griffith, named financial and arrangement committees at their first meeting and decided to have representatives of all the Portland civic organizations meet with the committee at electrical lunches each day during the Week.

The Denver, Colo., committee, which will this year handle the celebration throughout the State, has met and contributed details for the State-wide celebration. Th festival in Denver last year was one of the most picturesque in America, the occasion taking on all the aspects of a Mardi Gras. Denver plans, this year, to outdo its record last year.

To Flood Light Statue of Liberty

THE statue of Liberty, gift of the Republic of France to the United States, will be illuminated for the first time with its new permanent flood-lighting on the night of December 1st, according to a program announced by the Society for Electrical Development.

The statue belongs to the nation and not to any one city and its flood-lighting on the eve of America's Electrical Week most appropriately inaugurates the national electrical celebration starting December 2d. It is proposed to reconsecrate it, with the President, possibly, and the Atlantic fleet, prominent civic and governmental officials present at a notable program of dedication.

Through the activities of the society, in co-operation with the New York World, and with leading Government officials and electrical engineers, plans have been made to lay a cable from the New Jersey shore to Bedloe Island, which will carry current for the illumination. This will provide all Bedloe Island, where the statue is located, with central station service instead of the isolated plant as was originally proposed.

This installation will endure as a national exhibit of central station service and, in a picturesque way, be an inspiration for flood-lighting civic buildings, arches, statuary, etc., throughout the cities of America.

Office Building Lighting

Will light colored walls reduce the expense of illuminating office buildings 30 per cent? At the recent convention of the Illuminating Engineers' Society, Mr. Samuel G. Hibben, of the Westinghouse Electric and Manufacturing Company, read a paper on "The Economics of Office Building Lighting," and, among other valuable pieces of information, gave data showing that the annual cost of illuminating a moderate sized office building can be cut from $15,000 down to $10,000, merely by the use of light-colored interior painting.

Timber Conservation by Electricity

A new process has been discovered tor drying and conserving timber which is being tried in Europe with a great deal of success. The "Nodon" process, as it is called, makes use of electricity. A strong electric current passing through freshly-cut wood appears to cause a chemical change resulting in oxidation of certain parts, together with a physical change in the cellulose. On account of this, the wood is better preserved against the action of fungi and is more suitable for mechanical use. It is said that in a few hours a thorough oxidation of the wood sap takes place by this process, which ordinarily requires several months in free air. The method can be so successfully applied to green timber that it is thoroughly seasoned in a few weeks. The moisture in the wood helps to carry the electric current and hence, when the process is applied, the timber should not be too dry—in fact, immediately after cutting is advisable. The electrical energy required is 3 to 6 kw. per cubic yard.

Would Raise Height Limit of Concrete Structures

Asserting that there is now no real reason why reinforced concrete structures should not be allowed to go to the height of 150 feet, as are steel frame buildings, that there are buildings now contemplated which would be built to that height if the existing ordinance permitted, and that the additional cost of steel frame construction should not be forced upon builders who want to go to the 150-foot limit, Raymond G. Osborne recently addressed the Los Angeles City Council with an urgent plea that the new building code be revised to put reinforced concrete and steel frame construction on the same plane. The present Los Angeles ordinance limits reinforced concrete to 133 feet.

Mr. Osborne accompanied his letter to the Council with a copy of a letter sent to the revision commission in May in which he states that "it is my firm conviction that while several years ago this difference might have been justified, at the present time there is no reason for maintaining this difference in allowed height. The letter goes on to state that:

> Permanent safety and street congestion are the two main factors governing the height of buildings. As for permanent safety it has been unquestionably established that reinforced concrete buildings may be designed and constructed equal

JAS. KERR, PRESIDENT J. BAYLIS, SECRETARY

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in strength and safety to those constructed with the skeleton of structural steel. The second point to be considered in limiting the height of buildings, that of street congestion, does not depend in any way upon the materials of which the building is composed.

The argument used to establish the difference in the allowable height of these two types of Class "A" buildings, namely doubt and uncertainty as to the permanency and safety of reinforced concrete, have become obsolete and in the light of the experience gained during the past few years no new arguments have been advanced to justify retaining this difference.

It is generally conceded that a reinforced concrete building may be built for less money than one of equal size and strength constructed with skeleton of structural steel, therefore I feel that the additional cost incurred in constructing buildings with structural steel should not be forced upon the builders who wish to build to the full height of 150 feet.

Succeeds Sound Construction Company

The J. M. Dougan Company succeeds the Sound Construction and Engineering Company in San Francisco. Offices of the new company are in the Hearst building. The personnel of the J. M. Dougan Company is composed of James M. Dougan, Roy E. Chrisman and Charles A. Whitton. The following interesting announcement has been sent out:

James M. Dougan, Roy E. Chrisman and Charles A. Whitton announce that they have opened offices at 716 Hearst building, San Francisco, for the purpose of carrying on a general contracting business under the name of J. M. Dougan Company. The Sound Construction and Engineering Company, of which Mr. Dougan has for years past been president, and where the other two members of the new firm were associated with him, will no longer maintain offices in this locality, and what work they now have on hand will be completed by the J. M. Dougan Co.

Partial list of buildings constructed by members of J. M. Dougan Company:

Building and Location—	*Cost*
Moving High School of Commerce, San Francisco	$160,000
New City Hall Foundations, San Francisco	40,000
Rainier Brewery, San Francisco	563,000
Lockwood School, Oakland	75,000
Concrete of Hilgard Hall, Berkeley	106,000
Pumping Plant 1500, Sacramento	75,000
Post Office, Los Angeles	1,250,000
Wilmington Wharf, Los Angeles	52,000
Foundations Citizens National Bank, Los Angeles	65,000
Southern Pacific Commissary Buildings, Los Angeles	40,000
Benson Hotel, Portland	750,000
Two Telephone Buildings, Portland	450,000
Reed Institute, Portland	525,000
Green Building, Seattle	425,000
Stander Hotel, Seattle	310,000
Puget Sound Dry Dock, Puget Sound Navy Yard	625,000
West Wheeler St. Bridge, Seattle	200,000
Sprague Building, Tacoma	225,000
Fife Building, Tacoma	200,000
Mohawk Building, Spokane	150,000
Spokane High School, Spokane	210,000
Gonzaga College, Spokane	100,000
Brown Building, Spokane	120,000
Agricultural College, Pullman, Wash.	400,000
U. S. Army Post, Fort Worden, Wash.	330,000
Silver Bow Court House, Butte, Montana	700,000
Post Office, Idaho Falls, Idaho	101,000
Post Office, Lewiston, Idaho	92,000
Post Office, Missoula, Montana	190,000
Post Office, Medford, Oregon	90,000
Hudson Bay Co.'s Store, Victoria, B. C.	425,000
Union Club, Victoria, B. C.	250,000
Clatsop Co. Court House, Astoria, Ore.	250,000

Exposition Site to Be Residence Tract

Plans for converting the Exposition area into a residence park de luxe are being prepared by Mark Daniels, the landscape engineer. Already over 85 per cent of the 100 property owners have approved the project.

The chief owners of the land are the Oelrichs, Fair and Vanderbilt estates. Mrs. Virginia Vanderbilt looked over the plans a few weeks ago and was convinced of the wisdom of the scientific planning which will constitute a splendid city achievement.

The undertaking is a big one. With the Palace of Fine Arts, California Building and the Marina as a nucleus Daniels has worked out a scheme of scientific planning bringing the locality to a level worthy of the Exposition's setting.

The property, consisting of 125 acres, will be divided into about 750 lots. There will be three main boulevards. The main east and west axis centers on the dome of the Palace of Fine Arts. The Mall connects Baker street with the junction of the two main boulevards and forms an imposing setting for one of the finest parking conceptions in the country.

Big Ford Plant at Emeryville

It has been announced that the Ford Automobile Company of Detroit is planning to build a plant on the coast second only to its Eastern factory. It is stated that the coming year will see work started on the new plant on the site of the old Emeryville race track. It is said that the company will spend not less than $1,000,000 on the enterprise.

Steel Tank and Pumping Plant

Arrangements are being made by the Crocker-Huffman Land and Water Company for a complete transformation of the present city water system of Merced, which call for the development of an adequate well supply of water, replacing the service from the lake reservoir used heretofore. The company estimates that the improvements will mean an outlay of $30,000.

Cause of the Collapse

The foreman employed by a big contractor rushed into the office of the boss, wild-eyed and palpitating.

"Boss," said he, in a greatly agitated voice, "one of them new houses of ours fell down in the night."

"What's that?" exclaimed the boss, jumping right up and beginning to take notice. "What was the matter? How did it happen?"

"It was the fault of the workmen, boss," answered the foreman. "They made the mistake of taking down the scaffolding before they put on the wall paper."

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The Contractor

HIS TROUBLES AND SOME OTHER THINGS

Awarding Contracts to Lowest Bidders

THE time-honored policy of awarding contracts to the lowest bidder seems to be coming in for general criticism. There appears to be a widespread trade awakening to the fact that this "lowest bidder" system has developed an order of competition that is not compatible, either with good work or with healthy business standards. Indeed, the time would seem to be ripe for a movement, practically nation-wide, to supplant this system with something based upon a clearer recognition of the essential mutuality of contract obligations. This interest in doing away with the lowest bidder idea is by no manner of means confined to the building trades, as a letter to the Engineering Record from Zenas W. Carter, field secretary of the Granite Paving Block Manufacturers' Association of Boston, goes to show. Writing on the basic unwisdom of the present method, Mr. Carter says:

> In my opinion most city engineers and city officials recognize that this is a pernicious practice, and that many times a city spends more money for its work through this method and gets a poorer job than if the contract were awarded at a higher price. It may be that the difficulty of changing the practice is entirely due to the attitude of the average citizen, who so frequently comes to the conclusion that city officials are dishonest unless contracts are awarded to the lowest bidder. At the same time it is certain that the citizen in his private life and the manufacturers do not place their orders solely on the basis of the lowest bid. It seems to me that some method by which cities would award contracts to the bidder whose price was nearest the average would tend to improve the class of contractors, raise the standard of work, and make city work more attractive to efficient, responsible parties. Some such method of awarding contracts to the bidder nearest the average would prevent a contractor from receiving excessive prices and at the same time would prevent the city from accepting bids from irresponsible men, who bid so low that they must either fail before the work is completed or skin the job. * * * By making the average bid the standard, the aim of the contractor in every case would be to make the price absolutely correct and just for the work. It would give the engineer an opportunity to demand that the specifications be lived up to and relieve him of the feeling that it would be unjust to insist upon right adherence to the specification when the contractor had taken the job at a losing price.

This average bid suggestion is a good one, but like every other suggestion advanced in this connection is open to a serious objection, comments the Builders' Guide of Philadelphia. In the case of public work it might conceivably operate to throw contracts to a favored bidder. In the matter of private work it would enable the architect in every case to arbitrarily control the award. What the Guide would like to see, and we feel that it will come in due course, is a thorough and searching analysis of this entire question by a committee representing jointly the American Institute of Architects and the National Association of Master Builders' Exchanges, with a view to arriving at an equitable and mutually satisfactory solution of what has come to be a vexed and highly complicated problem.

The ideal solution would seem to lie in the quantity surveying idea in vogue abroad. Certainly with an expertly computed table of the quantities at the command of every bidder on a given job the probability of irresponsible bidding would necessarily be largely reduced.

Keith's Magazine discusses one of the many phases of this problem—that relating to the man who is building a home, in the following terms:

> There is a more or less widespread feeling among home builders that the contractor is a "cunning" one, against whom it is necessary for the hapless owner to guard himself by all the arts of which he may be master—that he is a wizard who by the use of a few pieces of paper and the practice of his own "rites" and mysteries, converts the great piles of lumber, brick, and stone, with other curious things, first into the confusion of the half-built house and then after a lapse of time and the clearing away of the debris, accomplishes the bringing forth of another new home.
>
> Does this new home meet the ideals of the owner? Yes, provided perchance he is generous in his allowance for the work, that he has been wise in the choice of his contractor, that the contractor and all of his workmen have at all times been particular, so much so as the housewife herself, and lastly, though not least in importance, that the contractor has fully understood what has been in the mind of the owner; then it is that the new home proves to be just what the owner expected.
>
> Now, if the new home is not perfect, wherein lies the trouble? We may generally say that it is because of one of two reasons or both: first, a misunderstanding between the owner and the contractor as to what the owner really wanted, and secondly, there not being a clear agreement as to what the cost of the completed house was to be. If both of these reasons apply, the owner, as well as the contractor, is going to have some "fun."
>
> It is easy to see where the architect comes in and where his services are to the interests of the owner and to the satisfaction of both owner and builder, for it is up to him to see that there is a perfect understanding on all of these matters, to learn what the ideals of the owner are and his actual needs and to reconcile these with the size of his pocketbook, and this should all be done before a contract is made with the contractor, and by so doing the architect helps to

interpret clearly to the contractor what is wanted and to look out that it is secured.

While some contractors may take advantage of the unsophisticated owner, we think that much consideration is really due him. The present system of "bidding" for a job works a good deal of hardship on the contractor. He must spend a great deal of time and effort in figuring estimates on many a job he does not get. If he figures low enough to get under his competitors, he may have to take it "out of the job," or dig down into his jeans. After all, the best results are secured by cordial co-operation in the triangle relation between the owner, the architect and the contractor.

A License Law for Builders

NEW YORK is seriously discussing the advisability of licensing its builders. As the result of a careful study and consideration of the recent collapse of the building at 188th street and Marion avenue, in the Bronx, by experts of the Advisory Council of Real Estate Interests, it has been suggested that builders be licensed. This action, it is claimed, would cure numerous existing evils and fix the responsibility. Discussing this subject, Julius Franke, of the firm of Manicke & Franke, said: "There is an ever-increasing demand for safeguarding buildings during construction. The Building Department is supposed to be responsible for the proper erection of buildings, but it no more can undertake this great task efficiently than could the Board of Health or any other medical board undertake to prevent carelessness or malpractice in the treatment of sick persons.

"Some system should be adopted whereby inefficient or ignorant persons or persons ignorant of the practice and principles of building be not allowed to supervise or direct the erection of structural parts of a building.

"In Europe this is mostly done by licensing or in some other way allowing only those who are proficient to have charge of the erection of buildings.

"I would suggest some law whereby the proper supervision of buildings in the course of construction, or when altered, is made mandatory.

"I would further suggest that when plans are filed the name of the individual or firm who supervises construction be mentioned in the application for a building permit and that when any change is made the department must be notified.

"The supervisor, who may be an architect, engineer, or builder, should possess the proper qualifications. These qualifications, to be arrived at by stipulating members of certain architectural societies, licensed architects (licensed architects are now provided for by New York State and other State laws), also by accepting members of certain builders' societies as competent, and also any other individual who has the proper qualifications arrived at through examination.

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"I might add that if the insurance and trust companies making building loans would be more particular about the architect and the supervision on the part of the architect or responsible superintendent it would be a great step toward eliminating the irresponsible supervisor.

"Most of the insurance companies have their own representative, who approves of the plans and who from time to time goes to the building to look over the work. This supervision on the part of these companies is, however, mostly for the purpose of making payments and it is impossible for them to go into all the details of proper supervision.

"They must rely upon the architect or builder and for that reason they should be more particular about the architect and the builder and that the work shall be properly supervised by them."

The Architect and the Contractor

A portion of an article by F. E. Davidson in the American Contractor is here reprinted, believing that such a plan rigidly adhered to would aid the building interests of Pacific Coast cities very materially, assist the architect in the accomp'ishment of his work, and do the contractors a real service:

I am of the firm belief that the various architectural societies should establish a credit rating bureau to rate the work of contractors as to their record for giving service. There are many firms of contractors in all lines of work who do not know how to give service and who have absolutely no business being in the contracting field. Every architect knows of the inevitable injuries and annoyances which are caused on work by the unskilled and the unscrupulous contractor, and every architect knows what a pleasure it is to do business with any contractor who gives even reasonably good service.

If the architectural societies will establish a rating bureau for the use of their members and if their members will only use same, the unskilled and unscrupulous contractors would be driven from the contracting field and the architectural societies will have done more to improve the standards of service by contractors than any one thing ever suggested.

An architect who will award or permit an owner to award a contract to any firm of contractors whom he believes will not do the work so awarded to the best of their ability, in my opinion not only is gambling with his own reputation and his client's money, but will find that the increased cost of supervising the work, not so much in money but in time and worry, will show that the work was actually handled at a loss. If we take into account the dissatisfaction of the client in the result obtained, if we consider the disappointment of the designer, the final result is disastrous to the reputation of the architect, and consequently belittles the profession. The only way to eliminate dishonest and incompetent contractors is to refuse to do business with them. No other method has been or ever will be successful. Every architect who has taken a chance has lost.

Court Decision of Interest to Contractors

In July last the Supreme Court of California rendered a decision that should put on their guard building contractors in that State at least. The court found as follows: that a contract had been duly entered into between the contractor and the owner of a lot in San Francisco for the erection of a house thereon. The contract was filed and the work begun. After the foundation was constructed a second contractor took over the contract and erected the house. When the contract was completed and the balance of the contract price paid, excepting the sum of $660, it was discovered that the foundation had been constructed and the house erected partly on an adjoining street, whereupon the owner refused to pay the balance claimed by the contractor. It appears that from the beginning the work had progressed, and, in fact, was finished, without the contractor or owner realizing their encroachment on the street.

In the contractor's suit to recover the balance of the contract price, the court found that it would cost the owner more to correct the fault than the amount withheld on the contract price; that as the contract specified that the house was to be built on the owner's lot it would have been manifestly unfair to compel the owner to pay the contract price and then pay the cost of having the building moved on to the owner's lot; that although the contractors were innocent of their error they were, nevertheless, violators of substantial terms of the contract. Hence, judgment was awarded against the contractor.

This ruling should cause contractors to determine with more care the meets and bounds of owners' properties before beginning work.

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Handsome Residence with Stucco Exterior Finish on a Base of Armco Iron Lath

THE home illustrated above is such as is planned by a man who looks to the future. All of the sheet metal work as well as the lath which forms the base of partitions, ceilings and stucco is of the Iron That's Made To Last.

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and it has other merits of the first importance. Because of its work-ability, and its unequalled enameling qualities, The Chattanooga Stamping and Enameling Company, of Chattanooga, Tennessee, has chosen Armco Iron for its quality line of enameled products, of which the table top here shown is a good example. Porcelain enamel on an Armco Iron base has a beautiful finish, because of the almost complete absence of the gaseous impurities, which are the cause of blemishes when ordinary material is employed.

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Automatic Drainage of Tidal and Flooded Lands

By B. G. MARSHALL.

This article by Mr. Marshall undoubtedly will be read with interest by engineers and others identified with reclamation work. It tells of a cast iron drainage gate that is automatically opened and closed by the pressure of water on one side or the other and which has been found an economical substitute for pumping plants.

VAST areas of fertile lands along the Pacific Coast and in our inland valleys are below the high water level of the sea or the neighboring river. Dikes and levees serve to exclude the waters at all times except those of unusual floods, but the natural drainage of these areas during rainy seasons and, still

FIG. 1—*Automatic Drainage Gate, Ralph Bull ranch, near Arcata, California, on Humboldt Bay. Concrete conduit and wooden cover. Area of conduit approximately 16 square feet. Approximate thickness of concrete 6 inches. The wood gate is not sufficiently sensitive to water level changes.*

more, the excess water of irrigation, tends, of course, to collect in the lowest places, from which it must be drained or pumped away if these portions are not to become water-soaked and worthless. It is often necessary to draw this water to a certain point and pump it over the levee and back into the river. Pumps and engines and necessary attention for this work constitute a continual expense; and this is one of the conditions which make the work of the rancher in the so-called "Island Country" in the Sacramento and San Joaquin valleys so different from that of the farmer of other localities. The American, however, brings native ingenuity to bear on such problems, and makes the sun and wind and the force of gravity do many things for him which in the old countries would be accomplished with back-breaking labor. These lowest portions of cultivated land are always well below the level of the river at high tide, but it is often the case that the surface of the river at ebb tide is quite a little lower than that of the

FIG. 2—*Intake end of 36-inch Automatic Drainage Gate installed on Russ Island, five miles west of Vallejo, California. Due to the absence of seepage, the gates in this locality handle rain water drainage only. Six 36-inch gates are now rendering satisfactory service on this particular island.*

water to be drained away. It follows that a pipe through the levee, which was opened at low tide and closed when the river was high, would accomplish the drainage without the use of power of any sort. Some ranchers employ such pipes, opening and closing the gates by hand at the proper times, and dispense with the use of a gasolene engine.

The further step of making these gates automatic so that the pressure of the water on one side or the other would open or close them when the conditions required it, was very easily taken. The most successful of these devices seems

FIG. 3—*Automatic Gate discharging from 48-inch "Armco" iron culvert on Reclamation District No. 1000, Sacramento County.*

FIG. 4—*48-inch Automatic Drainage Gate, attached to 390 feet of corrugated pipe, installed on Reclamation District No. 1000, about twenty miles north of Sacramento, California.*

to be the cast iron automatic drainage gate shown in the accompanying illustrations and intended for use in connection with pure iron corrugated pipe.

Although these gates were first developed for tidal conditions, it very soon became evident that there were a great many situations where they were equally useful, although there is no tidal rise and fall. Figures 5 and 6, illustrating installations on Russ Island, near Vallejo, California, show the use of such apparatus under tidal conditions, but those relating to Reclamation Districts No. 1000 and No. 1001 in the Sacramento Valley show the use of these gates and pipes under drainage conditions wholly unaffected by tides. The fact is, of course, that this device may be successfully employed wherever there is land to be drained into a body of water the level of which is sometimes lower than the water level of the land itself.

For several reasons this type of gate is economical and effectual. It is so hung and counterbalanced as to be extremely sensitive to water pressure from either direction. The result is that it infallibly closes against the water which, under conditions of high tide, floods, etc., would tend to run back from the river or other waterway on to the land to be drained, and, on the other hand, instantly and surely opens to permit the draining out of such water from the land being improved whenever the water level on this land is higher for the time being than that of the contiguous waterway. This delicacy and certain operation is one of the chief superiorities of this type of cast iron drainage gate over the rougher contrivances frequently employed for the same purpose.

The quality which makes corrugated pipe especially useful for levee work is the same as that which is probably responsible for its immense popularity in the form of road culverts. The corrugated form enables it to bend and adjust itself to changes of its bed and to continue to do its work under conditions which would cause any rigid materials to crack and break. Of course, the remarkable rust resistance of Armco iron is of great importance in respect to these pipes, especially where they are installed, as is often the case, where the water is salty or brackish.

The gate itself is water-tight, and where absolute water-tightness in the pipe itself is desirable it may readily be attained by extra close riveting and soldering or by dipping in some of the

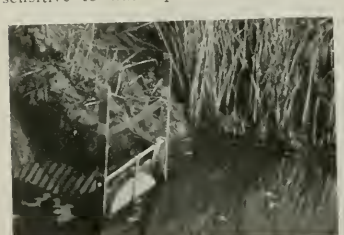

FIG. 5—*Gate partly closed, water rising. 36-inch Automatic Drainage Gate attached to 50 feet of corrugated pipe, installed on Russ Island, five miles west of Vallejo, California. This picture was taken just at the turn of the tide, and shows the gate, slightly open, discharging water. The tall metal extensions which are shown were supplied for the purpose of carrying counter-weights, which were found to be a hindrance rather than an aid and were subsequently removed.*

FIG. 6—*Automatic Gate closed against high water. 36-inch Automatic Drainage Gate installed on Russ Island, five miles west of Vallejo, California. This picture was taken about ten minutes after the turn of the tide and shows the gate closed. This gate was installed by means of a dredger at approximately one-half the estimated cost of a wooden gate of equal capacity.*

FIG. 7—*Wooden grating for catching debris. Automatic Drainage Gate, Ralph Bull ranch, near Arcata, California, on Humboldt Bay.*

FIG. 8—*Intake end standard drain for water pocket. The lower pipe has Automatic Drainage Gate on opposite end, and runs through levee into canal. The upper pipe is an inverted siphon used to carry the run off beneath the canal when flood water in the canal is too high to permit operation of the gate. Water thus entering the District is permitted to drain naturally to the river levees, where it is caught in sumps and pumped into the river.*

substances of asphaltic base commonly employed for this purpose and for further protection of the iron against corrosion.

This material has been collected with the co-operation of Messrs. Symmes & Means, agricultural engineers, San Francisco, who have furnished data on installations in Napa and Solano counties; and Mr. Emery Oliver, general manager, and Messrs. E. M. MacKusick and R. G. Clifford, engineers of the Natomas Consolidated of California, with regard to Reclamation Districts No. 1000 and No. 1001.

The reclamation of flooded or sodden lands is one of the fields of engineering the importance of which is just beginning to be realized. Already many thousands of acres are, as a result of the application of modern drainage methods, producing abundant crops of fruit, grain or forage instead of insects, fever, and ma-

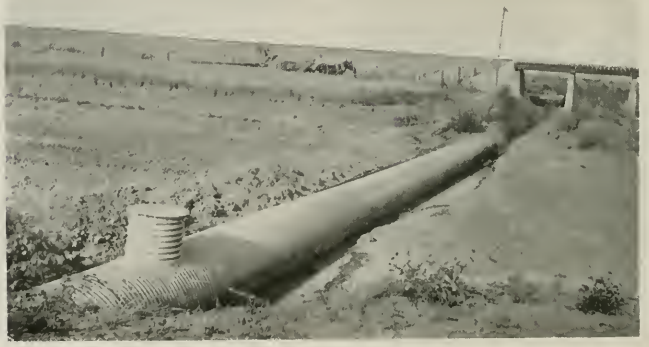

FIG. 9—*Showing 24-inch riser pipe 2 feet high, with bolted top, which is used to clean culvert after flood season.*

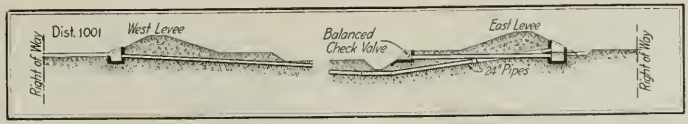

FIG. 10—*System of drains and automatic gate control used on Reclamation District No. 1001.*

laria. A Southern planter before the war, commenting on the fact that he and his neighbors for the most part remained poor and debt-ridden in spite of possession of fertile lands and numerous servants, while the inhabitants of cold and barren hill regions of New Hampshire throve by the sale of ice and granite, explained that the Yankees prospered by "selling their disadvantages." The same spirit finding expression in wider fields will add to the wealth of the nation by converting swamps and bayous into healthful and fruitful fields and gardens.

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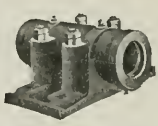
A New Contracting Firm

L. Dioguardi and Charles Terranova (the latter formerly of Terranova Bros.) have formed a partnership as general building contractors, with offices in the Westbank building. Although new in business as a firm, the partners individually have done work for Krafft & Sons, including a residence in St. Francis Wood for H. Carnahann, also work for Charles Paff, C. O. Clauson, Charles Fantoni and other architects. This firm secured the brick contract for the Daly City pumping plant. They are prepared to figure on any size job and promise faithful execution of any order entrusted to them.

Ring Around the Piling Kills Teredo

An extremely novel method of attacking the teredo problem, which is a serious one to marine construction in many parts of this country, has just withstood a sixteen months' test on the pier of Long Beach, Cal. These little destroyers attach themselves to the piling or other woodwork standing in the water, at some point below the high tide mark and down to about two feet below low tide, and several days are necessary for them to effect an entrance into the fibre of the pile. The present invention takes advantage of this fact and the animal is killed by the action of a metal ring which is placed loosely around the pile after it has been driven. With the action of the water this ring automatically traverses the affected area, and the repeated blows of the ring against the pile are said to kill the teredo before it has the opportunity of entering the wood. The abrasion resulting from the movement of the ring is inconsiderable.



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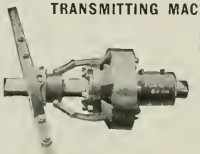

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THE following telegram was sent by a Sacramento architect to the Secretary of the Building Material Exhibit. It is one of many like requests which are received almost daily and which are given immediate attention—

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Judson Iron Works' New Plant

Ground has been broken for the building of the first open hearth steel furnace at the plant of the Judson Iron Works in Emeryville.

The matter of constructing such a plant has been considered for several years by the management of the big iron works and action was delayed from time to time until business and financial conditions would warrant the outlay.

The total investment will pass the one hundred thousand dollar mark, as the completed plant will cover approximately ten acres of ground, necessitating specially constructed buildings and expensive equipment.

One of the difficult problems to be solved was the securing of brick able to stand the terrific heat units required. However, this was overcome with a silica brick that cost $115 a ton, much of which is already delivered. In connection with the plant will be a steel stack one hundred and fifty feet in height, with a base circumference of forty-five feet and brick-lined to the top.

In the operation of the plant oil will be used as a fuel and the ores and manganese will come from the California deposits.

In order to have sufficient ground area for the buildings necessary to house the furnaces, it is necessary to wreck the north tier of three buildings, now in use as general machine and foundry shops, which is at this time under way. It is planned to have the entire construction completed and the furnaces in full operation by May 1, 1917.

A special spur track will enter the building from the Southern Pacific lines which pass the land.

The Judson Iron Works is one of the oldest industrial concerns of Alameda county, having been in actual operation for forty years, producing practically all lines of heavy iron construction with special departments for individual lines.

Contractor's Machinery Expert Returns from East

Edward R. Bacon has just returned from a trip East, where he visited several of his Eastern factories, including the Troy Wagon Co. at Troy, Ohio, and the Foote Mfg. Co. (makers of the celebrated Foote concrete mixer) at Nunda, N. Y. At the Troy Wagon Works Mr. Bacon found unusual activity, the shipments including a large number of motor truck trailers to France, for use as gun mounts. A special dump wagon is being made for Pacific Coast southern trade, on which the wheels have been oil-treated so as to withstand the great heat of the valleys. A large new factory is under construction for the manufacture of the Troy motor truck trailers.

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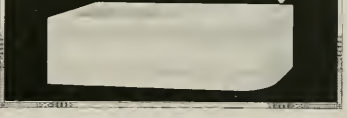

The Foote Mfg. Co. are six weeks behind on their orders. Their factory has had several new improvements, including electric welding machines for welding drums. The Foote factory is said to be the busiest mixer factory in the East and the Foote paving mixer is enjoying the greatest possible popularity and favor.

Mr. Bacon also reports great business both East and West for the big and little concrete and mortar mixer.

While in the East, Mr. Bacon made final arrangements for taking over the agency of the Sterling motor trucks of West Allis (Milwaukee), Wisconsin. This is one of the Big 5 heavy duty truck factories of the East. They turn out 150 trucks per month, of from two and a half to seven tons' capacity. Their plant covers ten acres. Edward R. Bacon & Co. carry a full line of these trucks for immediate delivery.

Mr. Bacon says prices will be much higher for all machinery during 1917 and orders will be subject to delays in filling. Some concerns are now taking orders for April, 1917, delivery. The Pacific Coast trade can count on prompt deliveries as long as Edward R. Bacon & Co.'s present stock holds out. Contractors who desire to add to their equipment should, however, lose no time in placing their orders.

Interior Decoration

To make possible more beautiful homes in San Francisco, the University of California extension division is going to bring from New York City Sumner Robinson, an interior decorator of note, to hold classes and give illustrated lectures on the subject of interior decoration in San Francisco and Oakland.

The lectures are to be broad enough to meet the needs of salesmen, buyers, architects, decorators, designers in any field, and of all who are interested in the decorative arts and in the making of harmonious homes.

The scope of the course is described in the following announcement: "They will include a survey of the field of interior decoration, a study of the fundamental principles that have survived through the ages, application of unity, harmony and fitness to decoration, historic periods, modern tendencies, individual expressions, modern conditions and problems, the ethics and methods of decorative salesmen, and will deal psychologically with the more subtle arts which can lift a room whether it be in a farm-house or a palace, above the commonplace and into an aptness and individuality of expression which give it its own charm and personality."

Enrollment for the course may be made at the San Francisco office of the extension division at 62 Post street.

You Wouldn't Omit the Bathroom —

from any house you're designing because there is a public wash-room in a nearby hotel. Yet this would be just as logical as omitting gasolene and lubricating oil storage equipment from the plans of a private garage because there is a public filling station just a few blocks away.

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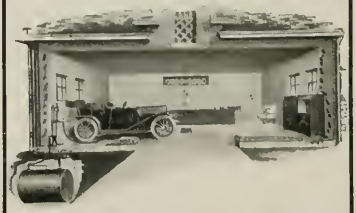

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.
(Required by the Act of Congress, August 24, 1912),

Of The Architect and Engineer of California, published monthly at San Francisco, California, for October 1st, 1916.

State of California,)
County of San Francisco,) ss.

Before me, a Notary Public in and for the State and County aforesaid, personally appeared A. I. Whitney, who, having been duly sworn according to law, deposes and says that she is the sole owner of The Architect and Engineer of California, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Publisher.....A. I. WHITNEY
627 Foxcroft Bldg., San Francisco
Editor.....FREDERICK W. JONES
627 Foxcroft Bldg., San Francisco
Business Manager.....A. I. WHITNEY

2. That the owner is A. I. WHITNEY, Sole Owner, 627 Foxcroft Bldg., San Francisco.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

A. I. WHITNEY,
Signature of Editor, Publisher, Business Mgr. or Owner

Sworn to and subscribed before me this 19th day of September, 1916.

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Last of Exposition Buildings

The big steel dome of the Palace of Horticulture, one of the last remnants of the Exposition to fall into the hands of the wreckers, was demolished with every possible precaution for the safety of the workmen.

The safety department of the State Industrial Accident Commission first held a number of conferences with the contracting company during the wrecking and as a result all of the safety suggestions made by the State officials were adopted.

The dome was 175 feet high and contained 550 tons of steel. Every workman employed on the dome was compelled to wear safety belts.

C. F. Weber Moves Los Angeles Offices

C. F. Weber & Company, for the past six years located at 512 South Broadway, Los Angeles, have moved to more commodious quarters at 222-224 South Los Angeles street, where they will be able to have a larger and more complete display of samples. The home office of C. F. Weber & Company is at San Francisco, with branches at Reno, Nev., and Phoenix, Ariz. The firm makes a specialty of school, church, bank and lodge furniture and theater seating.

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DECEMBER 1916

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Volume XLVII
Number 3

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Issued monthly in the interest of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast. Entered at San Francisco Post Office as Second Class Matter.

RESIDENCE OF MR. ELMER GREY, PASADENA VIEW FROM PORCH

Frontispiece
The Architect and Engineer
of California
for December, 1916

THE
Architect and Engineer
Of California

VOL. XLVII. DECEMBER, 1916 No. 3.

GARDEN SIDE, SKETCH FOR HOME
Elmer Grey Architect

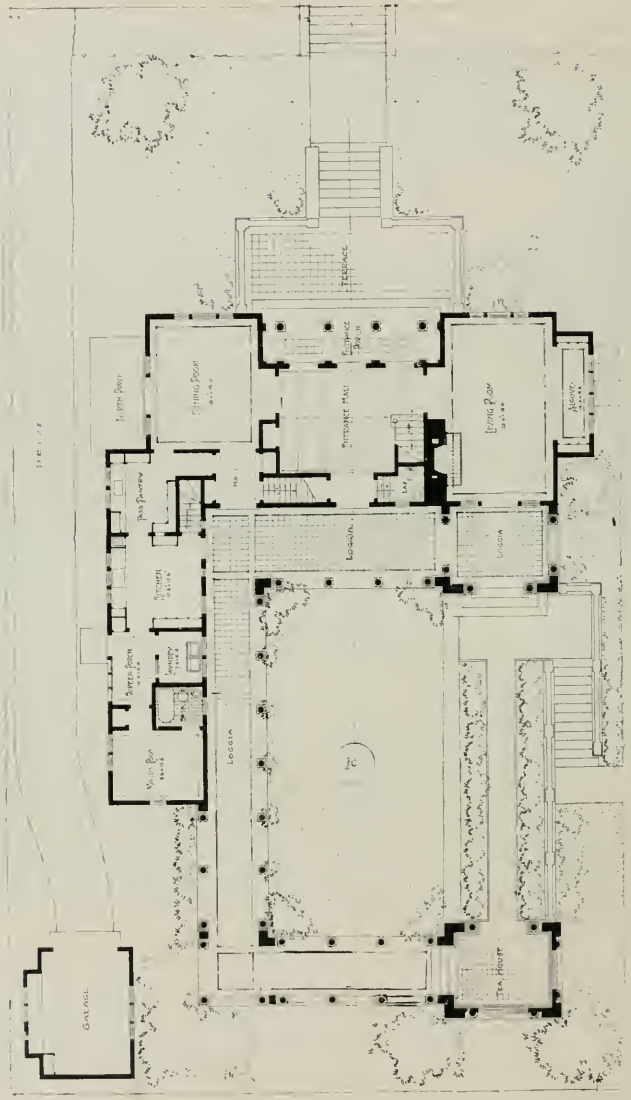
What a Home in California Should Mean

By ELMER GREY, Architect*

A RECENT writer has said that every house should embody and express the love or affection for it of its makers. Nowhere in this broad country of ours are there so many reasons why this should be true as in the sunny clime of California. It applies not only to the rich man, but to the man of moderate means as well, and also to the poor.

Let us see how this is so, and let us take first the case of the man of moderate means. A couple have lived in the East, we will say, or in the Middle West, and have not made much of a go of it for a number of years. The expense of keeping warm over winter consumed nearly all their earnings of the summer. Six months of the year was spent in stoking the furnace, while during a large part of the remainder much was taken from the zest of life by rain and excessive heat. Their extra money,

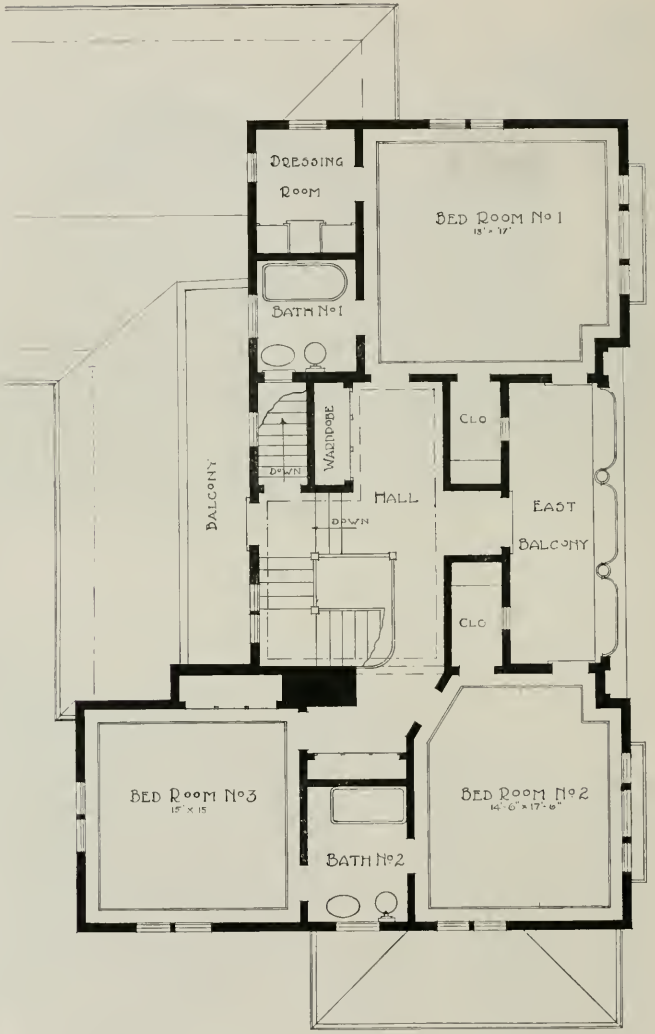
* Elmer Grey received his early architectural training with the firm of Ferry & Clas, of Milwaukee, Wis., during which time he did much of the work in connection with the planning of the Wisconsin State Historical Society's library and the Milwaukee Public library. He was associated with this firm for a period of twelve years, in the meantime crossing to Europe at intervals for the intimate observation and study that go with a bicycle and sketch book. In the early days of his work as a draftsman Mr. Grey came into notice architecturally through his design for a water tower and pumping station which won first prize over mature competitors in a competition inaugurated by the Engineering News and Building Record of New York. He practiced for three years in Milwaukee and is responsible for the design of the First Church of Christ, Scientist, illustrated in this number, and many interesting residences in that city. In 1904 he came to California and entered into partnership with Myron Hunt, under the firm name of Myron Hunt and Elmer Grey. For the past eight years, since the dissolution of that partnership, Mr. Grey has been practising alone in Los Angeles.



RESIDENCE FOR MRS. MARY C. RUSSELL, HOLLYWOOD
ELMER GREY, ARCHITECT

RESIDENCE OF MRS. M. C. RUSSELL, HOLLYWOOD
Elmer Grey, Architect

RESIDENCE OF MRS. M. C. RUSSELL, HOLLYWOOD—THE TEA HOUSE
Elmer Grey, Architect



SECOND FLOOR PLAN

HOUSE OF MRS. M. C. RUSSELL, HOLLYWOOD
ELMER GREY, ARCHITECT

RESIDENCE OF MRS. M. C. RUSSELL, HOLLYWOOD
Elmer Grey, Architect

time and energy seemed all to have been spent either in keeping warm or in trying to keep cool, and it did not seem worth while. So they decided to move to California.

Here they found a growing country and hence a demand for workers; a mild climate and hence an almost total elimination of the fuel problem; and the extra money, which back East went for fuel, here, after a few years of saving, they found they could invest in a modest home amidst beautiful surroundings, and perhaps even in an automobile.

The rich man comes to California to enjoy himself, bringing with him his car. He does not have to stay in the hotel three days out of five on account of inclement weather, but day after day goes spinning over miles of beautiful roadbeds, through a country rolling in places, mountainous in others and always varied in character. Golf, motoring, fishing and hunting, all of these and other outdoor sports he finds the climate and the character of the country admirably adapted to.

The poor man comes to California practically devoid of funds, we will say. Very well, he lives in a tent and is happy; for many are the California families whose permanent and relatively comfortable homes are in tents or "tent-houses."

Now all this affects the California home because, as we have said, the home should embody the owner's affection for it; and where climatic conditions are so favorable, where one does not have to spend so much of one's reserve force for the necessities of life, more of such energy may of course be given over to the beautification of the home and its surroundings. And always along with such process there is a growing affection for the thing beautified; so that finally the

RESIDENCE OF MR. HENRY E. HUNTINGTON, PASADENA, CALIFORNIA
MYRON HUNT AND ELMER GREY, ARCHITECTS

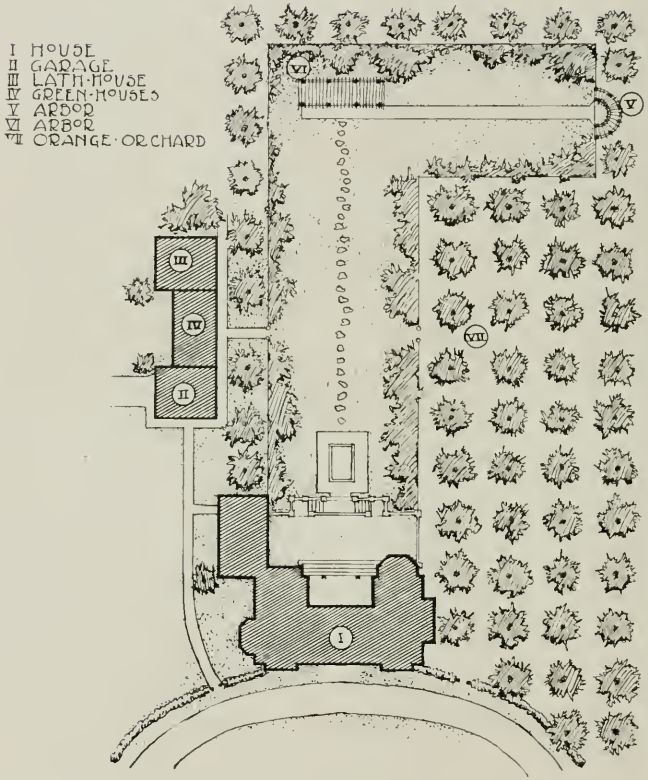
home comes to seem almost a part of one's self and without which life is incomplete.

To start out right the house should of course be well planned; an owner cannot well have an affection for a home that is poorly arranged or unattractive in appearance. If it is one of the simplest kind he may possibly plan it himself and do very well—some people have an aptitude that way. The plans from magazines are frequently helpful and many a modest little home has been planned with some such aid and proven a success. But if it is to be a house of more pretension, if it is to suit particular needs and possess distinctive charm, then an architect should be employed. Some may feel that this is a luxury, even for a good house, and may think of going to a contractor for plans, or to some building company which pretends to throw them in along with the job of building the house. But is it not evident that if any one gives plans away in that manner they cannot pay very much for the kind of service which makes them? And is it not equally evident that if they did employ the right kind of help they would have to receive returns for it in some way? In other words, if you want a house of individuality and charm, one suited to particular needs and which shall satisfy discriminating taste, you must have trained and competent help to plan it, for which you will have to pay whether you get it from a building company or go for it direct—and you are much more sure of getting it if you go for it direct.

Much of the charm of any section of country inheres of course in its having a distinctive character of its own, and this applies to architecture as well as to the landscape. One feels such a charm while travelling in England, for instance, where the architecture and landscape are distinctively English, or in France, where the same distinctive attributes are found. The varying tastes of those who come from different parts of the country find in California, however, plenty of opportunity for expression. The California landscape is so varied in character that it seems to permit a wider variation in the style of houses than do most other sections of country. There are extremes, of course, which do not blend; some pronounced styles of architecture seem hardly in place in California; but adaptations of them have often been so thoroughly amalgamated with more appropriate forms by local architects as to make combinations which are both piquant and charming. The Spanish, the Italian and the simpler French chateau forms have thus been treated with success, as likewise the New England Colonial. Mexican models have been shorn of their redundant ornament, while their admirable treatment of broad wall surfaces accented by enriched entrances has been preserved. Even the crude habitations of the Hopi Indians have lately been seized upon as models, and in some cases where their crudity has been relieved by trees and plenty of foliage have proven quite effective. Thus California seems to welcome to its fold the architectural styles of widely different countries, naturalizing them as her own, and perhaps it will be seen ultimately that her peculiar province is just thus to harmonize the styles of other climes, and her own distinctive style to consist of beautifully welded hybrids.

The greatest joy of home making and home living in California is however, derived from its gardens. Here the climate bestows its most winsome smile; here man is highly favored by the elements instead of battling against them; here, indeed, he finds what a home in the Far West really means.

In the East begonias, fuchsia, rubber plants and the like are grown in hothouses, or carefully nurtured in pots during the summer so they can be taken indoors over winter. In California many of the Eastern house plants grow wild, begonias and fuchsias assume proportions of immense tropical-looking growth, while rubber plants become enormous, wide-spreading trees.

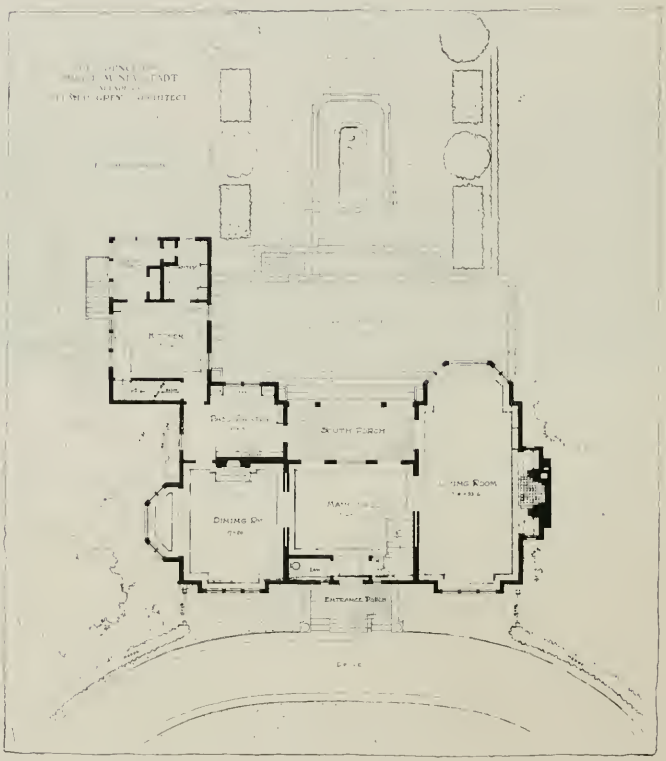


DIAGRAM·OF·GROUNDS MRS·E·M·NEUSTADT·RESIDENCE

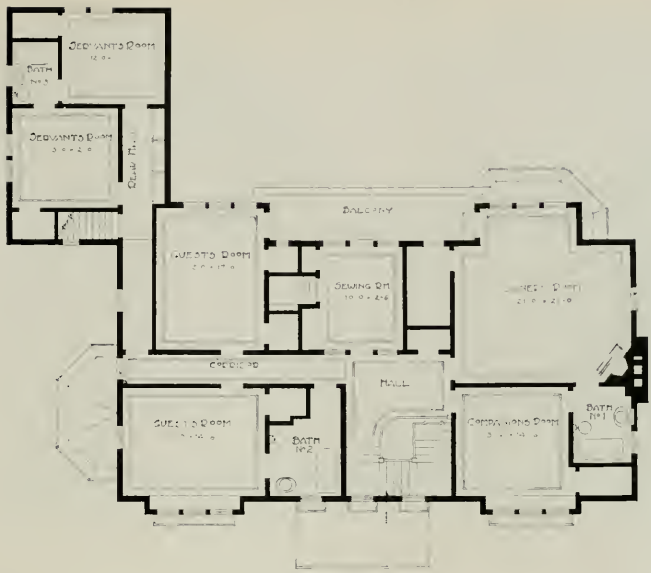
GARDEN FRONT, RESIDENCE OF MRS. E. M. NEUSTADT, ALTADENA
Elmer Grey, Architect

Every up-to-date house in California is planned with its garden related thereto. The principal rooms face the garden and are made easily accessible to it. What in the East is the "back-yard" is here a lovely garden, hedged in from prying eyes by a border of tall shrubbery usually, while between this background and the house are stretches of lawn, masses of gorgeous bloom, or perhaps in a shady corner, ferns and semi-aquatic plants nodding over some little pool. Nothing adds more to the joy of a home than does such an environment, whereby one may look out day by day upon the shrubs, the lawn, or the flowers of one's own choosing and care. Garden adjuncts such as pools, balustrades, and the like are much more easily obtainable in California than elsewhere, for the water in the pipes that feed the pools does not freeze, and the foundations of balustrades do not have to go down six feet below ground to escape frost. The garden itself requires less original outlay, and less care.

Another phase of gardening pleasure in California consists of its fruits. To be sure there are fruits in colder climates, but there is not the same variety, and the different kinds do not form so continuous a succession as they do in California. Of oranges there are several varieties, ripening at different times, and the trees themselves are alone worth while for the beauty of their foliage. Then there are figs, apricots, peaches, plums, nectarines, berries, grapes, cherries, persimmons, and without by any means closing the list we must not forget the alligator pear, for the Eastern epicure who has not tasted alligator pear has still a rare treat before him. This delicious fruit, a native of Mexico and the Hawaiian islands, has recently been found to do exceedingly well in Southern California, and great quantities of young trees have there been set out.



GROUND PLAN, RESIDENCE OF MRS. E. M. NEUSTADT, ALTADENA
ELMER GREY, ARCHITECT



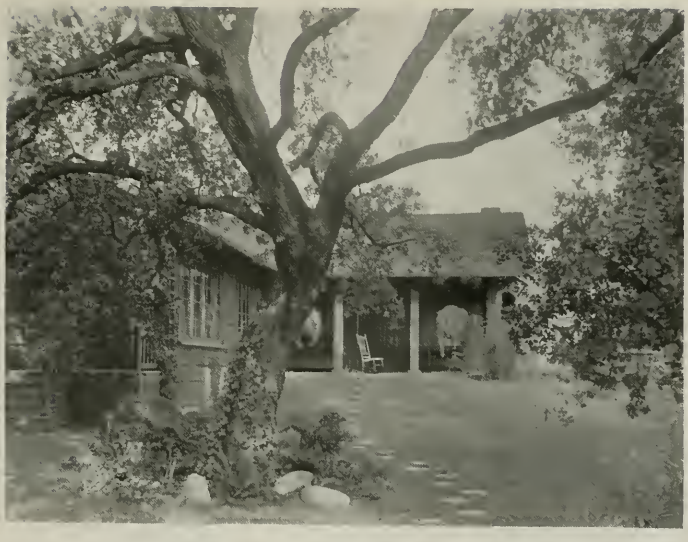
SECOND · FLOOR · PLAN

RESIDENCE OF MRS. E. M. NEUSTADT, ALTADENA
Elmer Grey, Architect

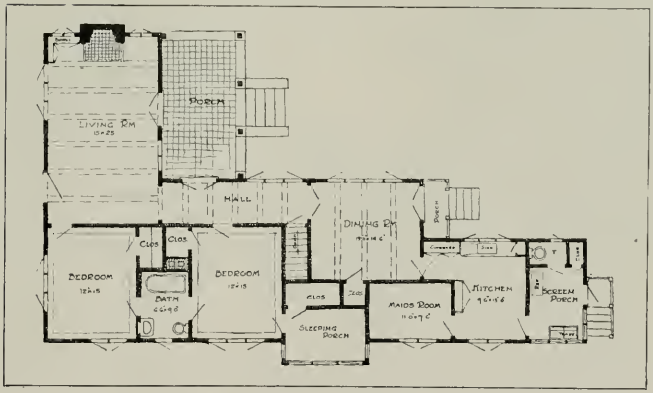
SKETCH FOR HOME
Elmer Grey, Architect

BUNGALOW OF MR. E. D. LIBBEY, NORDHOFF, CALIFORNIA
Myron Hunt and Elmer Grey, Architects

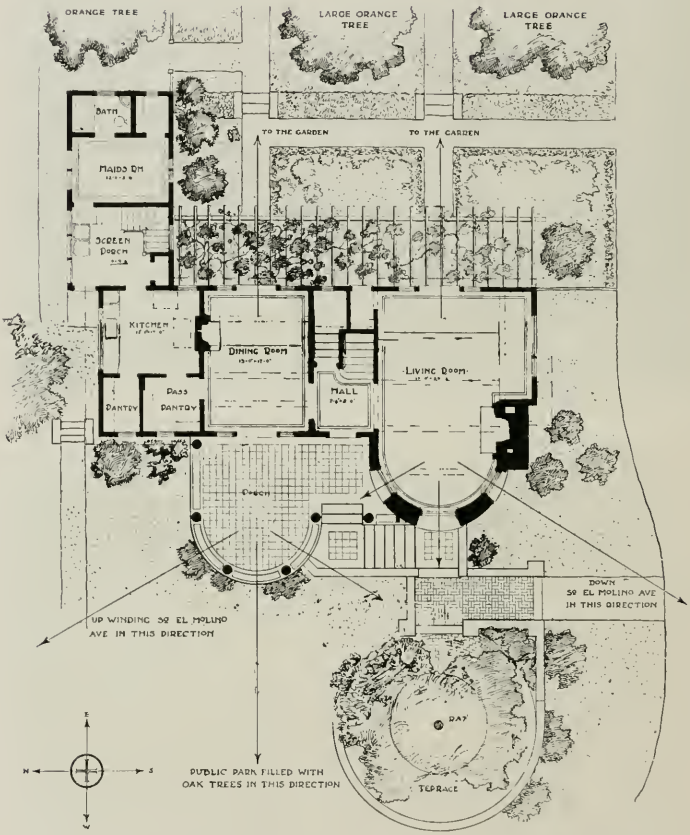
BUNGALOW OF MR. E. D. LIBBEY, NORDHOFF, CALIFORNIA
Myron Hunt and Elmer Grey, Architects



BUNGALOW FOR MR. JULIUS SEYLER, PASADENA
Elmer Grey, Architect



PLAN, BUNGALOW FOR MR. JULIUS SEYLER, PASADENA
Elmer Grey, Architect



GROUND PLAN, RESIDENCE OF MR. ELMER GREY, PASADENA
ELMER GREY, ARCHITECT

RESIDENCE OF MR. ELMER GREY, PASADENA, CALIFORNIA

LOOKING TOWARD THE STREET, RESIDENCE OF MR. ELMER GREY, PASADENA

RESIDENCE OF MR. ELMER GREY, PASADENA

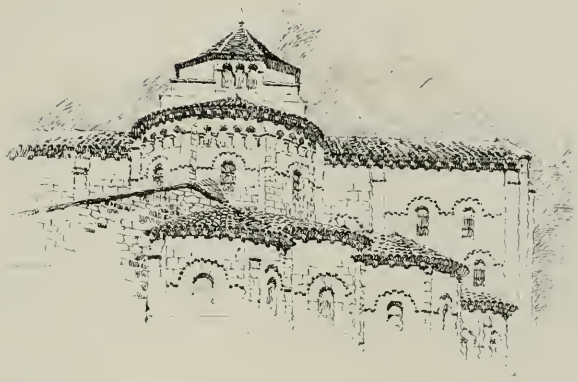
Elmer Grey Residence, Pasadena, California, looking from the dining room through the hall into the living room

EXTENSION TO G. W. WATTLES' GARDEN
ELMER GREY, ARCHITECT

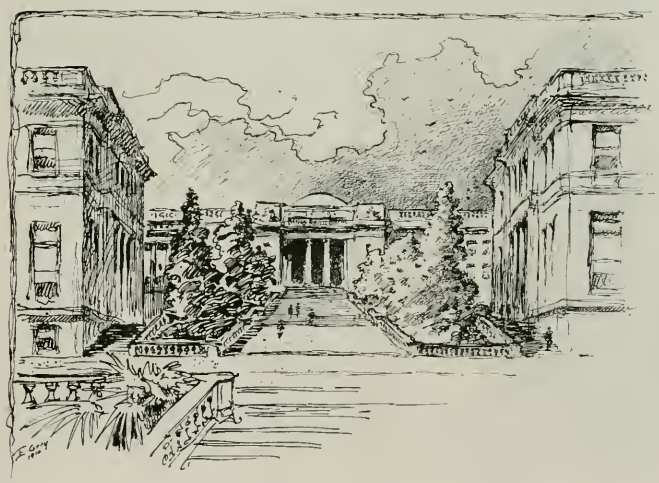
Extension to G. W. Wattles' Garden Elmer Grey, Architect

MR. G. W. WATTLES' GARDEN, HOLLYWOOD
Myron Hunt and Elmer Grey, Architects

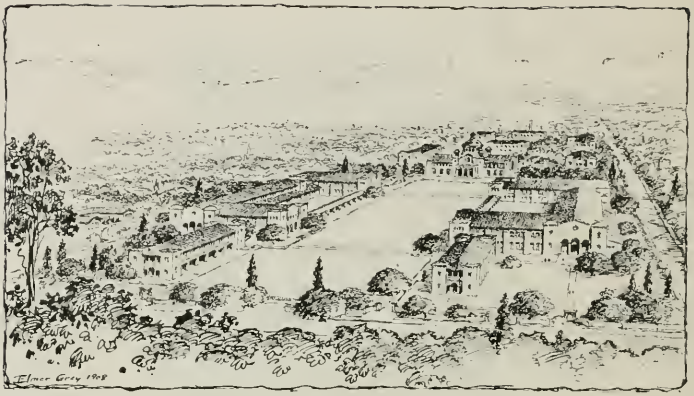
MR. G. W. WATTLES' GARDEN, HOLLYWOOD
Myron Hunt and Elmer Grey, Architects



SKETCH, PEN AND INK, AUXERRE, FRANCE
Elmer Grey, Architect



SKETCH FOR OCCIDENTAL COLLEGE, LOS ANGELES
Myron Hunt and Elmer Grey, Architects



SKETCH FOR CAMPUS, THROOP COLLEGE OF TECHNOLOGY
Myron Hunt and Elmer Grey, Architects

THROOP COLLEGE OF TECHNOLOGY, PASADENA
Myron Hunt and Elmer Grey, Architects

ENTRANCE, THROOP COLLEGE OF TECHNOLOGY, PASADENA
Myron Hunt and Elmer Grey, Architects

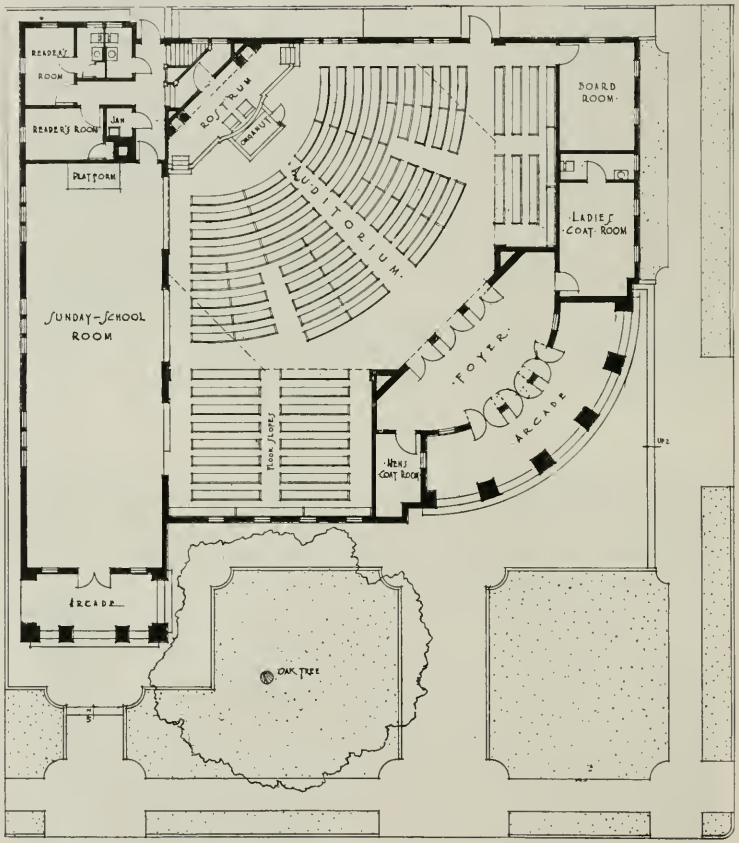
This love for gardening and out-of-door life which everyone enjoys in California, reacts upon the home life, making it more enjoyable. Places of interest innumerable are open to the man who owns a car, many of them only a day's jaunt from home. Just a little way out of Los Angeles, for example, is Riverside, with its famous and inimitable Inn. Modjeska's beautiful estate, aptly named The Forest of Arden, is near by, and Ramona's marriage place, a charming old ranch house with one of the loveliest gardens in existence, is not far away. Many similar places of historic or other interest are within easy reach.

Outside of San Francisco there is Del Monte with its famous Seventeen-Mile drive, dotted with Monterey pines, the California Big Trees, Lake Tahoe, the Yosemite, and many other interesting points. The man who enjoys farming can find in California the ideal spot. Here on a few acres he can live the "simple life" with profit, with pleasure, and in a most healthful climate. Such out-of-door aspects as these, reacting upon the home life in many delightful ways is what make a home in California so desirable.

BEVERLY HILLS HOTEL, BEVERLY HILLS, CALIFORNIA
ELMER GREY, ARCHITECT

GARDEN, BEVERLY HILLS HOTEL
Elmer Grey, Architect

LOBBY, BEVERLY HILLS HOTEL
Elmer Grey, Architect



PLAN OF FIRST CHURCH OF CHRIST, SCIENTIST, PALO ALTO, CALIFORNIA
ELMER GREY, ARCHITECT

FIRST CHURCH OF CHRIST, SCIENTIST, PALO ALTO, CALIFORNIA
Elmer Grey, Architect

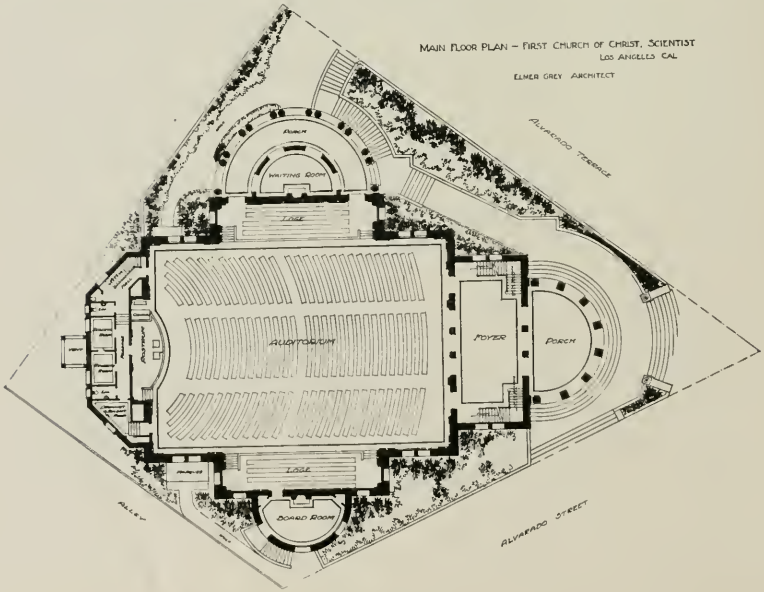
The Style of Christian Science Church Edifices

By ELMER GREY

THE rapid growth of Christian Science during the last few years and the chance of its equally rapid growth in the future, make the question of the character of its church edifices one that should attract all lovers of good architecture whether they are interested in Christian Science or not. Any one who has been observant must realize that the architectural aspect of our cities is being continually influenced by the rapid multiplication of the churches of this denomination. Many of these structures are very commendable in design, a few are unusually fine examples of church architecture, while it should be admitted that some might have been better. A truism is that the healthful progress of any art is furthered by intelligent criticism, by discussion between those who have acquired a more or less reliable judgment in such matters. Though tastes will differ even among critics, without the standard which the consensus of their intelligent critical opinions create, there would be no stable basis upon which to appraise the values of art. * * *

In the year 1 A. D. most of the world was pagan in its belief, and this belief found its most conspicuous architectural expressions in the temples of ancient Greece. Jesus' followers first worshiped in cellars, in attics, in any places where they could safely congregate; but finally they became strong enough to erect houses of worship of their own, the first Christian church edifices. These early Christian churches followed the Roman basilicas in form, and these basilicas were not churches but halls of justice. This borrowed form for a church had, in the course of centuries of development, several noteworthy culminations in style, which distinctly showed that its buildings were to be used as churches and not as law courts. One of these styles was the Renaissance, a revival of the old

FIRST CHURCH OF CHRIST, SCIENTIST, LOS ANGELES
Elmer Grey, Architect



Roman and Greek architecture which reached its highest perfection in such churches as St. Peter's in Rome, or Santa Maria della Salute in Venice. Another was the Romanesque, which is distinguishable by its liberal use of the round arch and the vault. Later on the Romanesque merged into the Gothic. The Gothic, almost losing sight of the motifs of Greek or pagan architecture, developed the arch and the vault to a high state of perfection, and reached its culminating glory in the cathedrals of France and England.

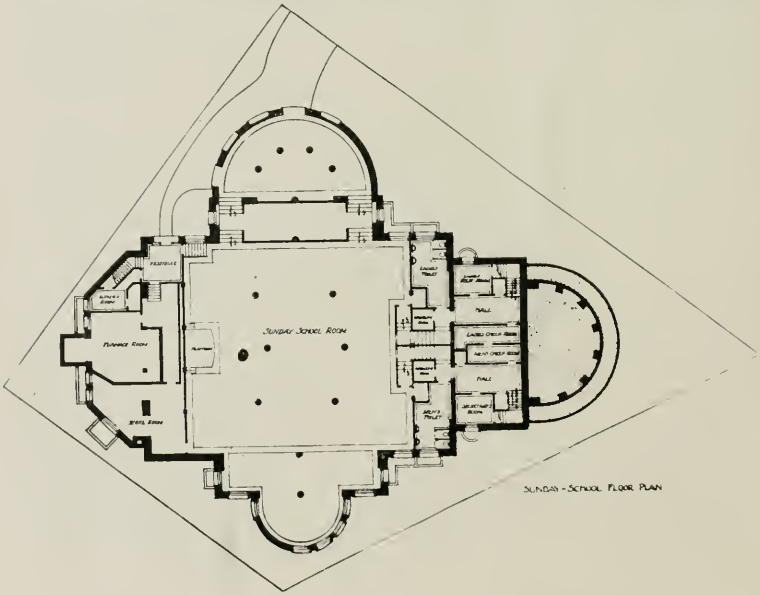
Nothing that has been done in church architecture since has equaled some of these original Renaissance, Romanesque and Gothic cathedrals and churches in point of beauty. They may well be taken as models, therefore, so far as their style is concerned, in designing Christian churches of today. This is not, however, what has always been done with Christian Science churches.

Many of them have attempted the Greek idea in their designs, various reasons being given for it. An objection commonly raised to the Gothic style is that it stands for the form and ceremony of the Orthodox church. It is contended that Christian Science is a considerable remove from Orthodox thought, and that this difference should show in the style of its church edifices. But the Renaissance stands for orthodox thought as truly as does the Gothic, as witness St. Peter's in Rome and numberless other Renaissance churches that have been built and are used today by one or another of the orthodox church forms. It has also been said that the idealism of Socrates, preached in pagan temple days, was nearer to the Christian idealism of Christian Science than is much of the later religion calling itself Christian, and that for this reason the Greek temples might appropriately be used as motifs for Christian Science architecture. But Greek historians tell us that the rank and file of the ancient Greeks were not at all the kind of people who were likely to have been followers of Socrates. They worshiped the gods and the oracles and participated in obscene rites. It is a question whether Socrates ever used the Greek temples for the purpose of promulgating his philosophy.

One writer has objected to the Gothic style because of its "symbolism." But all forms of art are symbolic, anything that expresses thought: language, music, all styles of architecture. The Bible is full of it, the Book of Revelations is almost entirely made up of it. It is not a question of symbolism, but of the kind of thought expressed by it. The Gothic for centuries stood for the only form of Christianity then existing. True, it was not Christian Science; but much of it was sincere reaching out for the Christ truth, earnest clinging to all of that truth then discerned; and were it not for those earnest efforts toward perpetuating Christianity, Christian Science might not be known today. Symbolism has been used by Christian Scientists in places, and with a freedom which should go far toward warranting its further use.

The Grecian style would be more acceptable with many for the purpose if it lent itself more readily to modern churchly expression. But the plan of a Greek temple was so entirely different from that of a Christian Science church plan that it cannot consistently be used as a model for the latter. The arch, the vault and the dome, for instance, were unknown to the Greeks. Their columns and, in fact, their entire buildings were enormous in scale compared with what are required nowadays. They did not superimpose one story upon another as is now done,

ENTRANCE PORCH, FIRST CHURCH OF CHRIST, SCIENTIST, LOS ANGELES
Elmer Grey, Architect



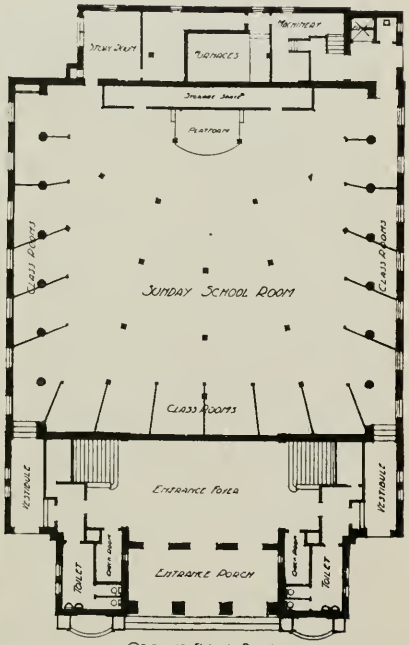
and their temple halls were always entered from the level. What has resulted when the Grecian style has been attempted for Science churches is really a nondescript, much more nearly resembling the work of the Romans than that of the Greeks. Some examples of it, skillfully handled, have been effective, but few are readily distinguishable as Christian churches, and some are travesties on Greek architecture. (See Encyclopedia Americana, "Architecture," by Russell Sturgis.)

Just where the Renaissance, the Gothic, the Romanesque, or some other appropriate style should be used is, perhaps, often a matter of taste, but it also should frequently be governed by environment. The style of most of our business buildings is of either Roman or Greek origin (commonly grouped together under the term "Classic"). Such surroundings, and especially if they include tall office buildings, are apt to overpower the more delicate beauty of Gothic design; and often, in such cases, the Classic would be more appropriate. In New York, for example, we know how Trinity has been dwarfed by the tall buildings of Broadway, while the new Madison Square Presbyterian Church, amidst similar surroundings, appears quite at home. On the other hand, the Gothic or Romanesque seems peculiarly fitted for suburban localities, where its spires may rise clearly above surrounding objects. No one, for instance, would wish to see Salisbury Cathedral removed from the green fields and spreading trees that surround it to the crowded thoroughfares of that part of London where St. Paul's stands. In such a locality as Salisbury's site, or even in the residence district of a large city where the surrounding buildings are not high, and where there are gardens, trees and lawns, the formal Classic is apt to appear, as compared with Gothic or Romanesque, cold, inhospitable, severe.

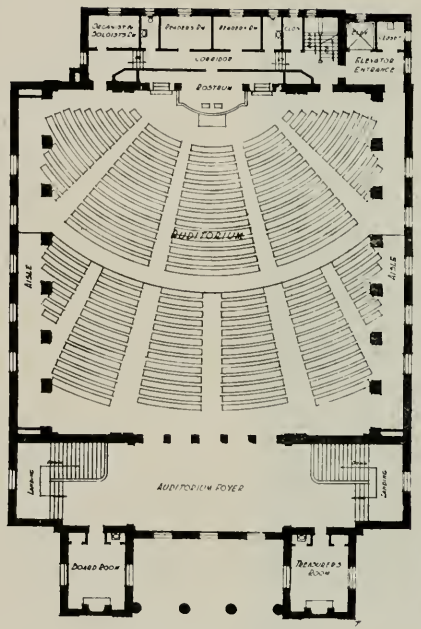
Another consideration is geographical location. Some localities have historic traditions or climatic characteristics which not only is it good taste to respect, but skillfully recognizing them often results in buildings that harmonize far better with their environments than do others that have slavishly followed the architecture of dissimilar localities. In warm countries, for instance, no matter what style is followed, because roofs are not required to shed snow they may be made less steep than those of colder climates and because in such countries protection from the sun's rays is often desirable, cornices should project further. In California, suggestions of the architecture of Spain, Italy and Mexico (where similar climatic conditions prevail) have been so successfully interwoven with some architectural work as to have excited widespread admiration, and even to have given rise to the idea that there is being created there a distinctly local style.

There is a practical side to Christian Science, which finds expression in its church edifices. They are to some extent, not alone places of worship, but also places where its healing work is often discussed. That is, Christian Scientists seem to have more reason than do most people for the informal chat after church meetings. These conditions have been met in many cases by the adoption of a vestibule or foyer enlarged over that usually provided in Christian churches. Oftentimes the basement or ground floor has been used for the purpose, the main auditorium above being approached through it by means of a stair-well or wells, cut through the center of the seating space. A better way of accomplishing the same result is to have the stairways lead into a vestibule above, from which vestibule the auditorium is entered; the object being

FIRST CHURCH OF CHRIST, SCIENTIST, LONG BEACH, CALIFORNIA
Elmer Grey, Architect



GROUND FLOOR PLAN



AUDITORIUM FLOOR PLAN

THE AUDITORIUM, FIRST CHURCH OF CHRIST, SCIENTIST, LONG BEACH, CALIFORNIA
Elmer Grey, Architect

GENERAL VIEW, CHURCH OF THE CHRISTIAN SCIENCE SOCIETY, MILWAUKEE
Elmer Grey, Architect

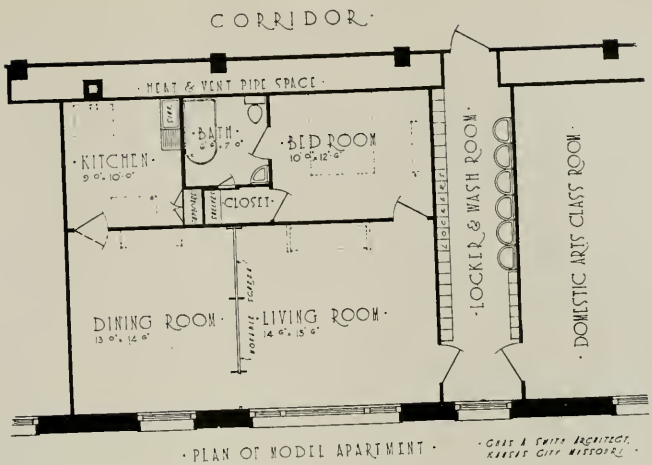
INTERIOR, CHURCH OF THE CHRISTIAN SCIENCE SOCIETY, MILWAUKEE
Elmer Grey, Architect

ENTRANCE, CHURCH OF THE CHRISTIAN SCIENCE SOCIETY, MILWAUKEE
Elmer Grey, Architect

to have the auditorium and its approach both on the same level. The most effective way is to have the entrance, the foyer, and the auditorium all on the same floor, but it requires more room, and consequently, sometimes a larger lot and increased expenditure. At least the arrangement by which the stair-wells are cut up through the auditorium floor should be avoided, as it is an undignified way of entering a large audience room and especially a church.

Many Scientists, as well as many others who are interested in Christian Science, have not been altogether proud of some of its architecture, and feel that its edifices should look less like library buildings, lecture-halls or banks than many of them do.

It is to be hoped that as Christian Science continues to grow, its architecture, by expressing more clearly a broad Christian character, may also grow—in truth and hence in real beauty.



This School has a Model Housekeeping Apartment

The practical teaching of household economics in the high school is greatly facilitated by a model apartment. A splendid example of such a model apartment is to be found in the Northeast High School at Kansas City, Mo. The rooms were designed and equipped under the direction of Mr. Charles A. Smith, architect of the Board of Education, and were completed with the building.

The partitions separating the rooms are built nine feet high and are capped with a wood cornice carried around the wall. The wall surface of the room is, therefore, equivalent to that found in the average home, and may be decorated accordingly. The ceiling height of the rooms is fourteen feet and is sufficient to admit light and air to the kitchen and the bedroom over the top of the partitions.

The movable screen is used to separate the dining room from the living room. The screen is removed when the room is to be used for special occasions, as, for example, when the domestic science room prepares a model lunch for the high school faculty or for the members of the Board of Education.

* * *

Will Design New Factory

Messrs. Ward & Blohme of San Francisco have been commissioned to prepare plans for a two-story and basement factory and salesroom for the H. N. Cook Belting Company. The building will be erected at Fremont and Howard streets and will cost approximately $35,000. It will be 91:8x157½ feet, heavy mill type of construction. It has not been fully decided whether to make walls of concrete or brick. There will be considerable steel sash, plate and wire glass windows, steel rolling doors, fireproof concrete vaults, cement floor, composition roof, and possibly a fire sprinkler system.

The City Manager—A New Opportunity for Engineers

By GAYLORD C. CUMMIN.*

IT is with a great deal of pleasure that I bring to you a new thought in public affairs which should interest you as citizens, and should be of peculiar interest to you as members of this body, because it has received its best expression to date through engineers, and promises in the future a wonderful opportunity for engineers to assume in the public mind the position to which they are justly entitled. Engineers have been entirely too content in the past to take credit only for their technical achievements, and leave the glories of dreams that come true, of wonders of administrative effort, of wise and judicial counsel which have made our country great, to rest on the brow of those who were in positions of prominence, and to whom they do not rightfully belong.

A real engineer is much more than a man who juggles with figures and formulae, and makes queer designs on a drawing board. A real engineer must know for what purpose he plans both economically and physically; he must know how his plans can become financially possible; in short he must be an administrator in order to make his designs accomplished facts, and to build efficiently and well. Very many engineers can do all these things, and yet are content with being employed only for their technical knowledge, whereas such qualifications as those above, equip them to take a leading position for public service in the community where they live.

In this field of public service the engineer has always taken a much more subordinate position than that to which he was entitled. Seventy-five per cent of the problems which occur in the administration of our cities are engineering problems pure and simple, and the rest of them are such that an engineer is at least as well fitted to handle as a man trained along any other line, they being largely problems of organization and social justice. The vital municipal problems are pure water and plenty of it, adequate sewers, clean streets, proper buildings, adequate transportation facilities, efficient police and fire protection, proper education and recreational facilities, etc.,—these things to be secured with the smallest expenditure of money possible to get the needed results.

Most of these are engineering problems and can be best handled by engineers; hence our opportunity once the citizens can be educated to the point where the administrative part of the government is judged on its ability as such, political questions being relegated to the legislative branch where they belong.

Municipal government in the United States has been unfortunate in both its genesis and its evolution. It is clear that advanced ideas and ideals of government are most likely to develop in comparatively small and coherent communities. In Europe the nations developed from cities, and national government from city government. Due to this development the cities of Germany and England have had a large measure of freedom, and abundant opportunity to develop what governmental forms were best suited to their peculiar needs. The result has been that the cities have been many years ahead of the nations of which they are a part, in government and in the effectiveness with which they render service to their people. In this country at the time our national government was formed, we had no cities properly speaking, and the simplest and crudest of methods sufficed to handle the municipal problems of the time. As the cities outgrew the possi-

*Paper read before the American Society of Civil Engineers by the City Manager of Jackson, Mich. In California the city manager plan has recently been adopted in San Jose with encouraging results.

bilities of the old town-meeting and our cities became large and their problems complex, a change had to be made, and our national form of government was modified and used by the city, and without any reference to the reasons for certain provisions in our Constitution. The cities accepted both the fit and unfit, even to the two houses in the legislative branch. To further complicate matters in many cases a large number of the administrative heads were made elective, whereas in our National Government as outlined by the Constitution, no administrative officer was supposed to be elected, the President being selected and appointed by a deliberative body;—the electoral college. This is the basis of the so-called "federal form" of municipal government.

It consists briefly of a legislative branch of one or two houses elected from districts called wards, an elected administrative officer called the Mayor, and elected administrative department heads ad infinitum. This form is distinguished by a system of checks and balances to insure honesty and prevent efficiency; by almost guaranteeing that no administrative head shall be selected for his fitness for his particular position; and by insuring that no man knows for what he is responsible, or to whom he is responsible. Furthermore, because the legislative branch and administrative officers are each severally responsible to the people, there is no teamwork in the organization and the real good of the city is sacrificed to petty political quarrels. The speaker was an officer in a government of this kind where the council was of one party and the administration was of another. Everything good started by the council was blocked by the administration and vice versa, the city very naturally suffering.

However, it is admitted that the federal form is not and never has been a success, so I shall not elaborate upon its shortcomings. Suffice it to say that it violates every fundamental of efficient organization.

The so-called "Commission" form as exemplified in Galveston and Des Moines is a decided improvement in some ways, but falls far short of the ideal. This plan consists in brief of a small council elected at large which constitutes the legislatie body, each member being made the administrative head of one of the city departments. This is an improvement, because ward lines are eliminated and the organization somewhat simplified, but still has a lack of centralized responsibility, places men in technical positions who are not specially qualified for them, and is positively vicious in making a man's success as a commissioner depend upon the success of his particular department and not the success of the city as a whole. This will result in time in a majority of the commission dividing the bulk of the funds among their departments, because in this way they can show more results, and the minority taking what is left, although their departments may be the most important. Under the commission form there is no fundamental improvement in organization, the improved results coming from an awakened public interest in municipal affairs shown by the fact that any change in government was made.

Now before we go further let us state a few fundamental facts that are often ignored in considering governmental affairs.

It is impossible to legislate honesty. This is attempted in our famous principle of "checks and balances," which does not prevent dishonesty but does prevent efficiency.

It is impossible to legislate efficiency, and no laws or charters will ever insure it.

The legislative branch of government is the real governing body, the policy forming body, while the administrative branch merely carries out

these policies; and any attempt to mix the functions as here laid down will result in disaster.

A city is a business corporation, with citizens as stockholders who expect dividends of service. A city differs from other business corporations only in that, fortunately, its income does not depend upon its efficiency.

Now considering the city as a business proposition let us analyze the type of organization as set forth in the federal and commission forms in the light of this viewpoint.

Would any of you care to invest your money in a business whose stock was widely held and where the stockholders elected a board of directors, a president, a general manager, a superintendent, a chief chemist, a chief engineer, etc., none of whom were to be responsible to each other and whose fitness for technical administrative positions was subordinated to their being "good fellows," because the individual stockholder would be in no position to properly inform himself as to those technical qualifications?

Would you care to invest your money in a business where the stock was widely held and where the stockholders subject to the same limitations as before should elect a board of directors each one of which would ex-officio become general manager, auditor, chief engineer, etc.?

If you did care to, your families would certainly be justified in worrying about your sanity, because such corporations would certainly end very quickly in a receiver's hands and yet you are investing for your health, safety, comfort and welfare in just such corporations.

The Commission-Manager form of City Government is an exact parallel to the form which our experience has taught is the only one under which satisfactory results can be obtained in business. It is not presented as bringing about a municipal millenium. Nor is it new in principle—only in application. There are no mysterious or wonderworking powers concealed within it. It is simply the application to city government of the only methods by which we have been able to manage business corporations efficiently. It does not insure efficient government. No charter form can do that, but it is the only form under which efficient government can be expected, judging by our experience in business.

It consists briefly of a small council elected at large, corresponding to a board of directors and whose duties are purely legislative. This body appoints the chief administrative officer, the City Manager, who corresponds to the general manager of a corporation, and who has complete control of the whole administrative machinery. He holds office at the pleasure of the Commission and is responsible to it for his acts. Responsibility is absolutely centralized on the Commission and through them on the Manager.

There is never any chance to dodge an issue by placing the blame on somebody else. If anything goes wrong in the administrative branch the Manager can be held responsible and the people can call their representatives to strict account for mistakes and inefficiency in the administrative branch, because of the Commission's power to remove at will the City Manager.

What has been the result of this mode of operation? In the City Manager cities party politics has been entirely eliminated from the administrative side of city affairs. In our city the Commission do not know my politics and I do not know those of a single one of my subordinates, and, furthermore, I do not care. A man's beliefs on the tariff or our Mexican policy have no bearing upon his efficiency as a Water Works Superintendent. What possible difference does it make whether the dog-catcher is a democrat, republican or socialist, providing he is a good dog-catcher?

We have teamwork in our organization and nothing can be accomplished without that. We must have it because the department head that refuses to work in harmony with the manager will soon be looking for another job, and the manager who will not work with his commission will not last very long.

Our department heads are selected for special fitness for the positions which they hold, and not because they are "good fellows." The manager must select on this basis because an inefficient department head will reflect on the manager and he cannot evade his responsibility.

Responsibility is centralized from top to bottom and this is the best incentive to honesty and efficiency that has yet been devised.

Our accomplishments in Jackson after one year's operation are as follows: We have taken city employees out of politics, reorganized the police force, and are developing it on the basis of a survey of its needs made by an expert in police organization; are using a trained social worker as policewoman to handle the young girl problem; have installed a modern system of double accounting with controlling accounts; have passed our annual budget based on a uniform classification of expenditure by kind; have installed careful cost accounting on city construction work, separated the sinking fund from the general fund and put it to work, accumulated a sinking fund balance of $45,000 where the old government had none, centralized the water department under a competent superintendent, read meters quarterly instead of semi-annually, presented bills to consumers as does any like public utility. We have divided the city into three sections, so that the same force of meter readers can be employed constantly, the bills for one section being due each month; have made a waste water survey; and are reinforcing the much neglected distribution system on a rational basis. We make purchases for the city through a purchasing agent and take all cash discounts, these amounting to enough to pay all the expenses of the purchasing agent and his office. We have replaced $380,000 on the tax rolls that was formerly exempt without legal reason; and made all assessments both for taxes and special purposes under one man on full time instead of nine elected assessors on part time, at a saving in cost and increase in efficiency. We are saving $4,000 per year by paying the treasurer a salary instead of fees. We are making a complete study of the very inadequate sewer system, based on a topographic map now being made on a scale of 1 inch equals 200 feet and with a 1-foot contour interval, and are contemplating a complete re-design on modern lines with a comprehensive plan for relief as well as for future extensions. We have installed a modern boulevard lighting system under a peculiarly advantageous contract; installed patrol system of repair on graveled streets; are giving efficient food and milk inspection; have replaced a part-time health officer with a competent physician on full time, made over twice as many inspections with one sanitary inspector as were made formerly by two; have centralized privately supported public nurses, the organized charities of the city, the city poor relief and humane officer under a trained social worker so that there is no duplication of work; we have made the city hospital and training school for nurses a model in so far as the buildings will allow; will construct this year a modern hospital building to cost $150,000; have equipped and opened a tuberculosis hospital; equipped and opened two branch libraries; started the improvements on a new 520-acre park; are motorizing the fire department on a plan that will make it unnecessary to purchase any new horses or sell any horses at the height of their usefulness; are completing a building code; are giving efficient electrical inspection, and have inaugurated inspection of weights and measures.

We have reduced the net debt over $50,000, paid off a floating indebtedness of over $20,000, given over $15,000 services not contemplated and ended the fiscal year with a cash balance of nearly $10,000 and liquid accounts receivable of $37,000, and have not raised the tax rate. Furthermore, although theoretically we operate for six months on borrowed money, and heretofore money was borrowed seven to eight months before receipt of taxes, we are now in our fifth month and have not borrowed a cent.

Any city can get as good results by using a few business methods and a little business sense. I am not detailing these things for any other purpose than to show the possibilities of this mode of operation, and to give you gentlemen a slight idea of the diversity of questions that come before a city manager. I have the administration of such unusual things as a public library, two hospitals, two cemeteries and a small summer resort.

The special point of interest to engineers is that all the larger cities operating under this form of government have engineers as city managers and they are making good. In fact, in many cases none but engineers are being considered. A city manager must be primarily an executive, but given that qualification the engineer is preferred over men of other professions, because such a large percentage of the problems which arise are engineering problems.

There are now over eighty cities and towns operating under this plan and the number is just about doubling each year. Where are we to find the city managers for these openings? Most of them will be drawn from the engineering profession direct, for a good many years, but finally we hope that the plan will spread so that a man can take it up as a profession, start as manager of a small town after having received an engineering education, and be promoted to larger ones if he makes good.

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A Tribute to Mr. Grey's Work

E. A. B. in "The Brickbuilder"

The decade just passed has given California an enviable place in the record of American architecture. The Southland, in particular, has become familiar to all who read for the peculiar charm of its residence work. There is something inspiring in the ample hills, the blue sky, the bigness of the out-of-doors that calls forth latent forces. During this period of development the influence of Mr. Grey's work has been notable, invariably for good, always on the side of sanity and permanence. A man's personality expressed through his handiwork is a very subtle and undefinable thing. It is the intimate quality that remains after all else has been analyzed, classified, and properly accounted for. It may be said with emphasis that all of his works speak of California, they grow out of our soil, they offer just the right mass against the sky, or find position among the eucalyptus and oak in such a way that one has no doubt they have always been there—they have the rare quality of being inevitable. On the other hand, Mr. Grey possesses, in a measure vouchsafed to few in practice, an intuitive feeling for the first great fundamental æsthetic principle which many, alas! stumble over and pass on to prospect in other fields without recognizing an outcropping of gold—that principle which establishes the big proportions of space and mass, solid and void, light and shadow. Even a small cottage may rise to distinction with no other claim. Combining with this perception of good proportions a sense of restrained enrichment, a sympathetic use of materials and choice of colors, we may find a definition of the qualities that attract us most of all in the ensemble of Mr. Grey's work.

The Fallacy of Free Plans

By NOBLE F. HOGGSON

WHEN, after many mental flights of enthusiastic exhilaration, a man makes up his mind definitely to proceed with a building operation, the first thing he thinks of is the matter of planning. He knows pretty well what he wants. He has been contemplating the project for a considerable length of time; he has the site and a certain sum of money which he expects to put into the operation. All preliminaries have been decided. He prepares to go shopping.

He has heard of "free" plans. Some one has told him that, by having several sets of sketches made by different architects, he may determine which architect displays the ability to best carry out his ideas and desires. So he gets in touch with a number of architects. He frankly tells each of them that it is a matter of competition, and that the plans which seem to suit his needs best will be selected; that only the winner of the competition will be paid for his work.

Only one of these architects has a chance to secure the commission for the proposed building operation. One of them will win; all the others will lose; and, strange as it may seem, the owner has obtained nothing "free."

It is considered unethical for an architect, who is a member of the American Institute of Architects, to submit in a competition plans for which he is to receive no remuneration. Nevertheless, the evil of "free" plans—and it is an evil—still flourishes, more or less openly. This is true, despite the vigorous efforts made by the various state and national architectural organizations, not only to discourage the practice, but to eliminate it entirely.

The owner spoken of above, who thought he had received something for nothing, was like most people laboring under that impression—he had not. Free plans are not free. When the successful architect in this little competition was awarded the commission, the owner assumed the cost that all of the losers had been put to. How? Because through the practice of competition the successful architect in this competition is possibly the unsuccessful member in many other competitions. In other words, the architect receives only one contract in several attempts. It costs him just as much to prepare the drawings for each of the unsuccessful attempts as it cost to prepare the drawings for which he is paid. Therefore the order he obtains must bear the cost of those he does not get. The owner (be he individual, corporation or school board), in the building operation the architect secures, pays a proportionate cost of all the jobs upon which the architect has wasted his energy.

* * *

Painting a Dark Surface White

Where a dark surface is to be painted white, the best result will be secured by first applying a coat of compromise color, midway between the ground and the new finish, and then putting the white over this. For example, over a dark green put first a coat of dark gray. A final coat of white, will cover this gray very nicely and make a neater job than if two coats of white alone are used.

EXCAVATING FROM UNDER WATER, CALIFORNIA BUILDING MATERIAL COMPANY'S PLANT, NILES

GENERAL VIEW OF PLANT AND GRAVEL DEPOSITS

Some Notes on Concrete Aggregates

With a Description of the New Plant of the California Building Material Company

By E. M. PORTER, C. E.

IN Alameda county, about twenty-five miles in a southeasterly direction from the city of Oakland, nature has deposited upon the floor of the great valley through which the Alameda creek surges, for untold ages, a bonanza deposit of gravel. This gravel deposit has been submitted by nature to heavy and continued attrition and erosion and is the selected material of the basaltic range drained by the streams, the softer stone having been disintegrated and removed by the action of the water, leaving only the most perfect nodules of the country rock.

In order to arrive at an ideal concrete aggregate, a series of tests were made at the plant of the California Building Material Company, which comprises about 100 acres. The daily production of gravel and sand was repeatedly sampled and the result of three years' operations was compiled to determine the average grading and proportions best suited for concrete mixtures of maximum density. Weight, volumetric density and void tests were made, as well as specific gravity and minimum constituent investigations. The gravel and sand mixtures were tested in a one cubic foot cylinder, the mixtures slowly poured in and jarred until no further settlement occurred, the materials having previously been analyzed for sizing and the weight proportions noted.

The generally accepted theory that quarried rock is better for concrete is true neither in theory nor practice, the highest results being obtained with gravel concrete. The best practical mix is one containing a large enough proportion of rounded surfaces to cause the concrete to mix and flow readily with a minimum amount of water, and a sufficiency of angular fragments to eliminate the rolling tendency under compression at the early periods before the adhesion of the cement to the individual particles has had time to fully develop. In quarried rock the various operations of blasting, gading, sledging, etc., are inclined to shatter the material so that the pieces, when delivered on the building site, contain

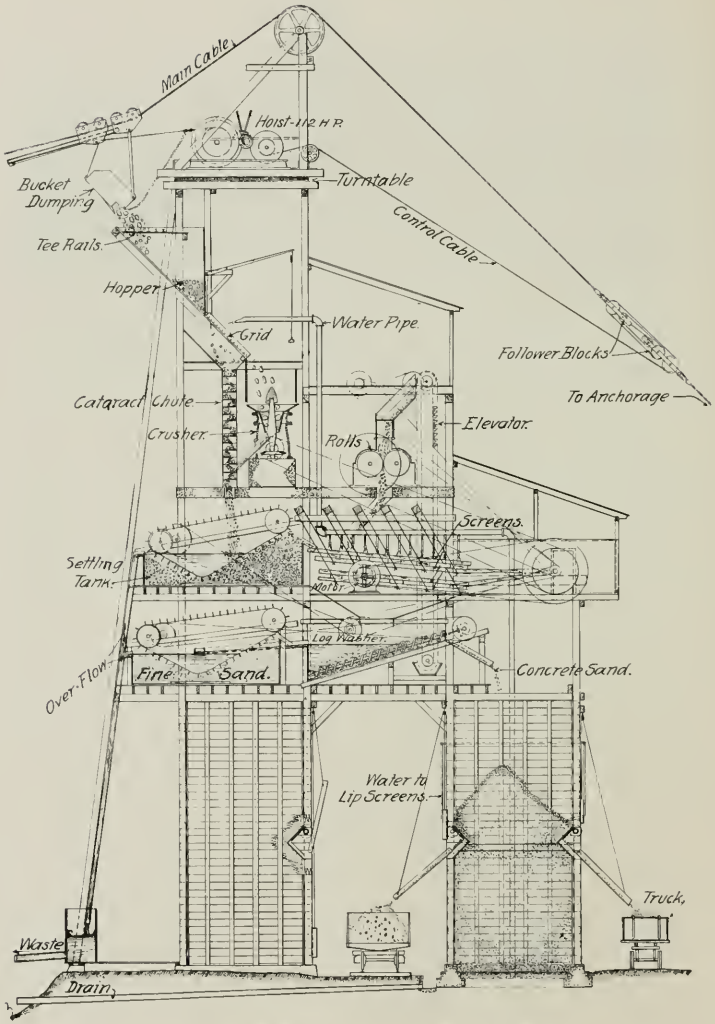


FIG. 1—*SHOWING SIDE ELEVATION OF PLANT*

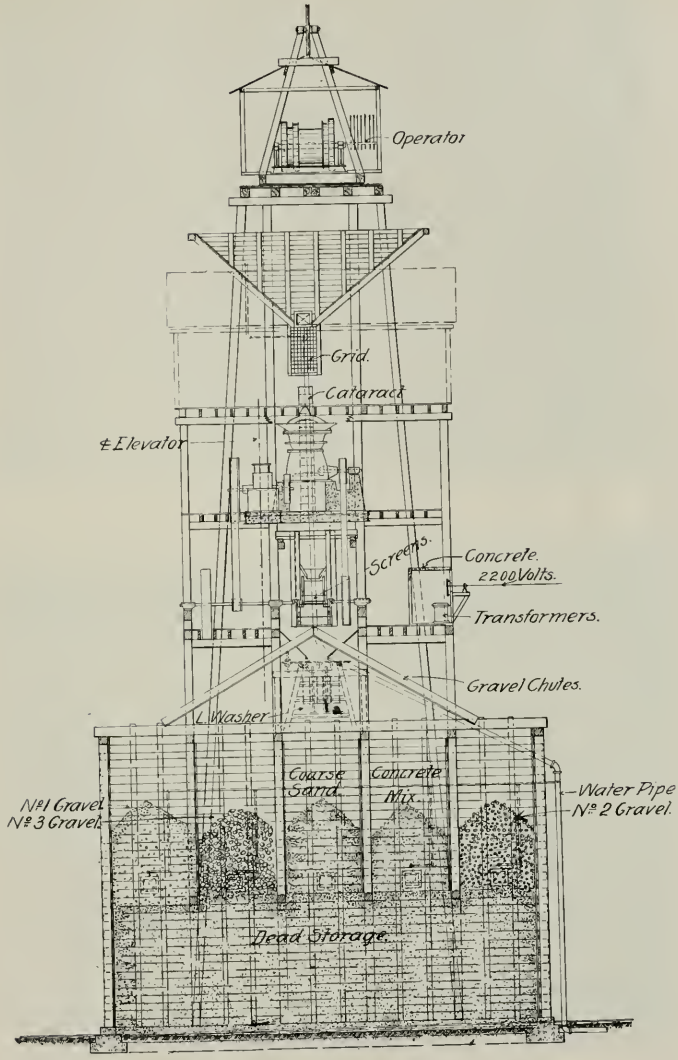
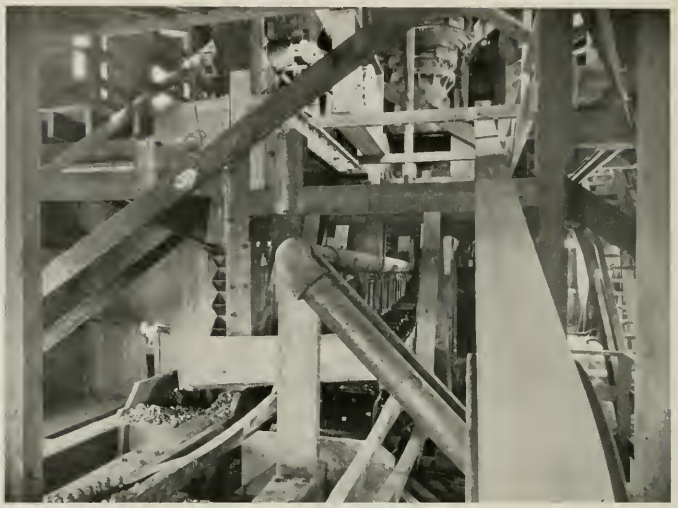


FIG. 2—SHOWING REAR ELEVATION OF PLANT



INTERIOR OF PLANT, SHOWING CRUSHER, SHAKING SCREEN AND WATER SUPPLY PIPE

SHAKING SCREEN AND WASHING PROCESS

Fig. 3.

flaws and microscopic cracks that may be a menace to the concrete. The gravel particles are of spherical shape, the angles having been worn off and thus contain less voids, there being no arching effect from angular ends interlocking.

The fact that the California Building Material Company's gravel and sand products were used exclusively for the erection of the Chevrolet factory, the Stockton street tunnel (the largest flat arch structure in the world) and many other important concrete structures, the specifications of which were rigid and exacting, indicates that this company's product makes an ideal concrete aggregate.

The process of producing washed gravel and sand is an interesting one, from an engineering and other standpoints, therefore a semi-technical description of the California Building Material Company's new plant is given here in detail. It is the first plant to be placed in operation on the Pacific Coast with a slack line cable excavator system instead of the old type steam shovel with cars and locomotive.

Figures No. 1 and No. 2 show side and rear elevations of the tower on which certain parts are arbitrarily sectioned to clear the illustration.

From the foundations at railroad grade to the excavator hoist is approximately 105 feet. From the sheave wheel located above the hoist the single 1⅝-inch steel track cable reaches across the river for a clear span of 900 feet. Suspended from a four-wheel special carriage that runs on this flexible track is a steel bucket of two cubic yards capacity, which digs and conveys to the receiving hopper all the river gravel that the plant uses.

In starting the excavator work, the field anchor was laid down in the farthermost corner of the property on the opposite river bank. The excavation was about 95 per cent under water, for quite a stream was flowing when the plant was completed in June of this year. The greatest depth reached in the first cut was sixty feet, at which the deposit appeared to be a mass of large boulders. Owing to the water, exact conditions could not be determined.

BUCKET CONVEYING RAW MATERIAL FROM GRAVEL PIT TO PLANT

"Slack cable excavator" signifies that provision is made to lower and raise the track line according to the working requirements. In other words, the track cable is strained up tight when the bucket is in dumping position, as in Figure 1, and slacked off again as the bucket returns to the pit and is let down for loading. The complete cycle of loading the bucket, raising the track, traversing to the tower, discharging the load and returning again can be made 30 to 35 times per hour, delivering, in average digging, two cubic yards each trip.

The speed of operation is possible on account of special features of hoist and bucket. The latter, known as the manufacturer's type "H," has been recently patented. It loads satisfactorily and no time is lost in discharging the load, for that is done by a continued strain on the hoist line after the carriage has reached a dump block, securely bolted to the track cable over the hopper (Fig. 1). On the instant when the forward drum is released the bucket begins the return trip and automatically takes position for digging or carrying (Fig. 3).

The forward hoisting drum used for bucket movements turns free upon the shaft and through two different sets of gears it is connected to a General Electric motor of 112 H. P. At each end of the drum is a powerful band friction, one on the high speed gear train and one on the lower speed. The loading speed is 200 feet per minute, and the traversing speed when bucket is clear of ground 800 feet per minute. The illustration shows the track cable passing over a 72-inch sheave at the tower and terminating at the pin of a two-sheave follower block. This block, in connection with the three-sheave block (solidly anchored to the ground), a ¾-inch cable and the rear drum of the hoist, furnish the

means of holding any desired safe tension in the track cable and of quickly making trip adjustments.

The hoist floor rests on an anti-friction turntable and is movable in a horizontal plane about a fixed center. It is therefore comparatively easy to turn the hoist in any direction desired in working over a gravel property.

River gravel is dumped as shown (Fig. 1) into a hopper from which flow is regulated by a vertical steel gate. A small amount of water admitted to the hopper through a 1½-inch pipe insures rapid movement of gravel even when considerable clay is present. Boulders larger than ten inches are retained on a cross grid of "T" rails shown near the top of hopper, where they are easily disposed of by sledging.

The hopper gate is under control of one man, who regulates the feed and averages each two-yard delivery over an approximate excavator trip period. Passing the gate, all material falls upon a grid, built of round bars, having effective openings about 2½ inches square. This grid is inclined at an angle of 40 degrees to the horizontal and is supplied with an ample flow of water, which carries through the cross bars all sand and small gravel, together with its content of clay and loam, into a cast iron cataract vertical chute, down which it flows with a zig-zag motion. Each 12-inch section of the cataract resembles a box with one-half of the bottom removed. In assembling, each box is set in reverse position with regard to the next section, forming the construction shown sectionally in Fig. 1.

Near the floor of the crusher room an opening in one section of the cataract chute admits crushed material from the gates No. 5K gyratory. The crusher is fed by all the gravel passing over the iron grid which terminates just above the bowl.

From the primary settling tank waste water carries much of the loam and soluble clay, but all material except the soluble portion is removed by a steel flight conveyor, and discharged onto the head end of a four-deck "Parrish" shaking screen.

The net screening surface of the top deck is 2 feet 8 inches by 15 feet 6 inches, and through a well-distributed jet system this area is deluged with clean water at the rate of 1,000 gallons per minute, globe valves regulating the quantity of water furnished to any section of the screen.

The screen shaft, turning 170 r. p. m., gives to each screen plate a total travel of 5 inches forward and 5 inches back for every revolution. The crank centers are paired and oppositely located, making a balanced operation.

The plate perforations in the top deck screen are 1¾ inches diameter, the next 1⅛ inches, then ½ inch, and in the bottom deck is one section of 1/10 inch, followed by three sections having 5/16 inch perforations.

This graduation selects a finished material very accurately sized. From the top deck delivery we have the rejected over-size gravel ranging from 1½ inches to 2½ inches. Rejects, largely flat round discs that have slipped edgewise through the crusher without breaking, are returned by the vertical bucket elevator to the 36-inch reducing rolls.

From the second deck delivery we have 1½-inch stone; for this material will have passed through 1¾-inch openings and is rejected by 1⅛-inch openings.

In the same manner we have 1-inch stone from the third deck and ½-inch stone from the bottom deck, going from the screen direct to the respective bins.

Through the bottom deck all sand passes to one of the two final washers. The finer grade, used for plaster and mortar, is selected by the first section of this screen having the smallest openings and with part of the water goes to a settling tank arranged just like the primary tank but of much smaller capacity.

The coarse concrete sand passes through the 5 16-inch holes to a standard twin screw "log washer," from which it is delivered to the sand bin. Means are provided to divert all or any desired part of this sand to an adjoining bunker set apart for the commercial product, "Concrete Mix."

Water flowing from the "log washer" was found to carry some of the finer grade sand and was turned into the final settling tank, where it has a better chance to settle. Waste water leaving this final tank carries in solution all the loam that escaped the previous processes. The fine sand is conveyed from the tank to the large bin just below the floor.

Absence of wooden floors in the storage bins imposes the vertical load directly upon the ground, inside the limits of the foundation walls. For loading railroad cars and automobile trucks a cast iron gate, with suitable swinging steel chute, is located in the center of each bin. The entire space from ground level up to this available storage point is therefore a "dead storage."

The bin walls are stayed in both directions by truss rods on approximately 4 foot 6 inch centers.

The preparation machinery requires two men, one at the gate lever near the crusher and one who is generally found on the screen floor in convenient reach of the motor and pump switch.

Employment is found for one other helper, whose principal duties are sledging boulders at the dump, dressing cables, oiling and getting supplies. The car loading, as stated before, is done by the locomotive crane, which carries a crew of two men.

In accordance with the policy generally followed, a ground storage for 100,000 tons is provided adjacent to the railroad sidings on both sides of the plant.

The extra cost of twice handling storage material is offset by gaining a very flexible means of meeting the market demands for tonnage of any sizes in excess of daily plant production.

For electric power the 60,000-volt transmission lines of the Pacific Gas and Electric Company lead to a transformer house set apart from the main building, where the current is reduced to 2200 volts.

The mill motor, operating screens, crusher, rolls, etc., is 75 H. P. constant speed, wound for 2200-volt service. The excavator motor operates on 440 volts, the reduction being made in oil transformer located on the screen room floor in a special concrete enclosure, shown clearly on Fig. 2. Although the wells and the centrifugal pump furnishing wash water are located approximately 400 feet from the plant, the starting switch for the pump is just outside the transformer house in the screen room.

The entire plant, including the slack cable excavator, was designed by and built under the supervision of Mr. A. D. Hadsel, vice-president of the Cable Excavator Company, Philadelphia.

Professional Ideals in the Practice of Architecture

By J. E. ALLISON, Architect.*

ARCHITECTURE has been the scale by which we have measured the culture and civilization of past ages, and it has been the most lasting and enduring evidence of that culture that we have.

When we study the history of architecture, and learn to appreciate in our small way the grandeur and refinement of much of the work of past centuries, we begin to appreciate also how little we really know of even the fundamentals of good design, to say nothing of the education and tastes of the masters who carried to the highest development the classics we strive so hard to imitate and adapt to present day needs.

We are handicapped, we say, by the speed of our day and age; those who employ us will not allow the time and the where-with-all to indulge in such dreams and ideals as led the old masters to the highest development of their art, and this is very true.

The steel frame, the elevator, the invention of galvanized iron, metal lath, and stucco, coupled with a greed for returns on investments, and an apathetic taste on the part of the unappreciative public usually discourage our fond dreams of a pure art, and rob our work of much of its joy.

Life is too short, we are prone to say, and the pressure of the high cost of living too great to stand aloof and combat the dominating spirit of commercialism of the age, so we reluctantly come down out of the conning tower of our "ship of high hopes," and are content to cope with our problems as we actually find them, which is no doubt the wisest thing to do under the circumstances.

Even so there is a wide range between the lowest and highest development of our art of this day, and we must not be discouraged if our clients and the public fail to appreciate our efforts and ideals. There is keen pleasure and a certain satisfaction in even dreaming of better things, though we may not always be allowed to indulge our ambitions in executing them. But let us strive continually to impose examples of good architecture upon our clients and the unsuspecting public at every opportunity, even though at the risk of losing a friend or a client by the operation, in the hope that some day some one in whose judgment the owner does rely may tell him confidently that it is good, and that he should learn to like it, and perhaps later on in some such way, he may acquire taste for better things.

The objects and purposes of the Institute are most worthy, and while at times and under certain conditions its code of ethics may seem a little arbitrary and ill-advised when one needs the job and the money, we should stand by them nevertheless, with a full knowledge that they are logical and right, and well worthy any sacrifice we may be called upon to make. Why should we place ourselves in a compromising position by allowing the owner to dictate our terms, or to beat down our price, or bluff us into entering his competition at a loss to ourselves, or rather to the unsuspecting next client, who in all confidence may give us a job outright, not knowing that his job is the one upon which we must square ourselves financially by curtailed service for other lost competitions.

Did you ever stop to consider just how many jobs you have actually lost by adhering strictly to the accepted principles of the Institute? It would surprise you if you did, and those few jobs, if any, you can much better afford to lose than to compromise yourself with the American Institute of Architects.

Most owners are all too keen of vision to lose sight of the fact that in a man who stands firm for a professional principle, even to the tune of losing a

* President, Southern California Chapter, American Institute of Architects. Extracts of Inaugural address before the regular meeting of the Chapter, November 14, 1916.

job for its sake, the owner has a fine guarantee of a conserving element to his interests in the execution of his work, and if he is not big enough to see and appreciate this phase, you have not lost much in passing up his job.

* * *

As regards the Joint Technical societies. It would be a fine thing if these societies could get together on some equitable basis in securing a common meeting place for all of the societies, and otherwise co-operate whenever possible. Let us lend our help in this direction as the opportunities present themselves.

The San Francisco Chapter has recently added to its list over forty new Institute members. This should be repeated in our Chapter, for we have the materials with which to do it, and we should have pride and steam enough to at least keep up with other Coast chapters, if not to surpass them; and to this end I have appointed a new special committee on Institute Membership, with Mr. Rosenheim as its chairman, in recognition of his fine work in this line last year.

Mr. Norton suggests extending our efforts in the way of Chapter influence into Arizona (which topographically belongs to our territory). I fear this would be a hopeless case, at least under present conditions there, for they have a law on their statute books regarding competition for public buildings, practically a duplicate of our old law of 1872. An effort was made at the last session of the Legislature in Arizona to have it repealed, but the architects there opposed it, presumably because its repeal would permit Institute members to invade their field of operation, by properly conducting Institute competitions.

It is hard to conceive of architects opposing the repeal of such a law, but I am reliably informed that such is the case, and under such circumstances, the only thing I can recommend, is that our educational committee do some missionary work with them, if possible.

Last, but not least, is another matter that I should like to see this Chapter take up in earnest, as perhaps its most important business for this year; inasmuch as the legislature meets this winter in Sacramento, the time seems quite opportune.

I refer to a certain paragraph in An Act to Regulate the Practice of Architecture in this State, passed by the legislature in 1901, with which you are no doubt all familiar.

It was a fine thing for this state and for the profession at large to have here in California at that time, men with the courage and the initiative to undertake to place upon our statute books a law that aimed to safeguard the public against unsafe and unsanitary buildings, and also to conserve the rights of those architects qualified by training and experience to practice.

Unfortunately this law, which as originally drafted was almost ideal, ran against political snags on its way through the legislature, and in order to pass muster at all, was subjected to certain modifications, which at that time perhaps did not appear as serious in their nature as they have since proven by experience to be.

These weak points, however, are no exceptions to the rule as applied to similar laws in their initial form.

It would seem expedient, therefore, and I should say indeed quite incumbent upon the profession, to put forth a concerted effort at the coming session of the legislature to have the law amended on these points.

The Design and Construction of School Buildings

By A. F. ROSENHEIM, F. A. I. A.*

THE "design and construction of schools" is a subject so broad in its scope and so vast in its importance that it can be treated only in the most superficial manner in the limited time at our disposal. It is a subject that should be of the deepest interest and concern to the citizens of any community, and I am gratified to be able to say that today a greater degree of interest is manifested by the public generally than ever before.

So far as Los Angeles is concerned, it is only within the past few years that the board of education has awakened to the fact that this city was far behind a long procession of smaller cities and towns, located within a radius of 125 miles, in respect to its schools, and in consequence of such awakening has taken a decided forward step and given us a better grade or type of school building than has been known in the city heretofore. And yet it has not been as progressive as might have been desired, or as the community had a right to expect.

Its policy has been penny-wise and pound-foolish, as in the case of the Los Angeles high school, by far the largest, the most costly and the most important undertaking to date, in which, for a paltry saving of $10,000, the board was apparently satisfied to have an otherwise very creditable building fall short of the requirements of an absolutely safe and fireproof structure. Certainly this is a most glaring example of the false economy generally practiced hereabouts, while many others might be cited to illustrate the point.

Recent progress in American school architecture has been almost wholly in the direction of refinement of plan and design, and the past year has given evidence of no radical departures or innovations which denote a permanent tendency in type, construction or equipment. There have been, however, some interesting examples of the acceptance of principles which were first enunciated less than five years ago, and it may not be amiss to review several of them.

The one-story type of school house, which was originated less than five years ago on the Pacific Coast, has received wide acceptance during the year last past. Architects in a number of cities have made important improvements on the pioneer examples in Oakland, Cal., and Rochester, N. Y., in the direction of compactness, ease of circulation and permanence of construction. The new buildings in Highland Park, Sioux Falls and Kansas City exhibit a very clever double use of the assembly room, stage and kindergarten and a splendid insight into the social center possibilities of the school plant. In the direction of low first cost, safety and elasticity the one-story buildings have not been excelled. The type has still to demonstrate its absolute economy in operation and maintenance. There is evidence that it is slightly more expensive to heat and ventilate in a cold climate, and there are some doubts concerning the cost of keeping roofs, etc., in repair. Principals and teachers are not a unit in believing that the administration of the one-story schools is as easy or efficient as two-story buildings, and there are many who see in the multiple use of the assembly hall and kindergarten a cause of disturbance that is not unlike a fundamental defect, which relegated

* A paper read before the Engineers and Architects Association of Southern California.

the old Lancastrian school into oblivion. It is worth more than a passing mention to note that the schools of London do not contain the familiar central hall of the one-story school, which has, until just recently, been a feature of practically all British school houses and may be traced back to the Lancastrian period.

In the planning of the older multiple-stories school building, the greatest recent advance has come as a result of the adoption of the Gary scheme of alternate study, work and play in the New York City schools. In planning new buildings and remodeling old ones for this use, C. B. J. Snyder, New York school architect, has eliminated the basement, except for heating and ventilating apparatus, and has turned the entire first floor into a playroom, a gymnasium, a workshop and a large auditorium.

Perhaps the most original current work in school architecture will be found in the junior or intermediate high schools which have been erected in several cities, including Los Angeles. They include the seventh, eighth and ninth grades and follow in organization and management the best practice in the departmentalized grade schools and smaller high schools. The buildings have large combination study and class rooms, small recitation rooms, shops and small laboratory. The junior high school is still too young, as a type of school, to predict the ultimate character of the school house which will be best fitted for its work.

In the construction of school buildings there has been a notable awakening in the direction of fireproofing. The Peabody, Mass., fire showed clearly that complete fireproofing is highly desirable and that safe exits, consisting of non-inflammable corridors and stairways, separated from class rooms, basements, etc., by a positive fire and smoke stop, are essential to the lives of the pupils. Just here there is much need for education not only of school boards but of architects and the public as well.

Legislation for the year 1915 has not been as general or as effective as might have been expected. In Illinois a splendid law compelling adequate ventilation and sanitation and fixing general standards for safety and completeness was enacted and put in force. The effects, which will not be noticeable for a year or two, will undoubtedly show a complete revolution in school building standards in the rural and village schools. Very complete rules for school house construction were put in force in the States of Minnesota and New Jersey. These fix definite minimum requirements for school buildings, and show what immense benefits are possible through a rational, flexible plan of State control of school architecture.

A gratifying improvement in the exterior appearance of some larger schools has resulted from the study of the possibilities of planting the school grounds with shrubbery and grass and arranging for the development of stairs, walks, balustrades and fences in harmony with the building. It has always appeared to me to be an artistic crime to set a well designed, expensive school house in the midst of a barren waste of playground. A modest amount spent for developing the school grounds into a beauty spot worthy of a splendid school which it surrounds is never wasted. It is just as essential to the education of the children as any feature of the building.

The single greatest unsolved problem of school house construction is that of cost. The rising building market, the requirements for vocational education and the demand for the wider use of the school house have

all combined to add to the cost of new school houses. Our system of covering new school construction by bond issues is at best an improvident public policy. It deserves not only study but positive action in the direction of a general acceptance of the plan of "pay as you go."

* * *

High School Architecture

THE California high school teachers' association received recently a report on the location and planning of high school buildings in which some significant facts and tendencies are brought out. The report which was prepared by a committee, headed by Mr. J. C. Templeton, superintendent of schools at Modesto, reads in part, as follows:

Your committee is not composed of professional architects or builders, but of principals who have felt keenly the handicaps of inadequate equipment for the work, and have been compelled to study the problem from the point of view of both teacher and principal. It is not a problem of ideal conditions, regardless of the factor of cost, but one of maxima and minima—the maximum working equipment at the minimum cost that we are working on. One of the foremost school architects in the state makes it his practice to consult both principal and teachers in regard to the details of their departments before completing the plans. By securing their written approval of the salient features of their departments he forestalls subsequent changes or complaints.

Every principal's investigation and report to his board and constituents formulates itself into a triangular shape—the site, the building, the funds.

For the past several years various educational bodies have passed resolutions emphasizing the importance of the legislature's prescribing by statute the minimum school site, to be determined by the enrollment of the school, actual or immediately prospective.

While many question the advisability of such legislation, the educational value of the campaign has already netted larger gains than is generally known. A recent investigation of the high schools which have been erected within the past ten years in this state shows that the average size of the sites of seventy-seven of them contain a fraction over eleven acres, ranging from five acres to twenty-five acres. This is cause for deep satisfaction, but not for future indifference or complete unconcern. We are still far from the acceptance of a minimum standard of school site of ample size for the outdoor courses and activities. We have a conviction that there is not a high school board in the state that is now planning to build to whom the size and location of the site is not one of the big questions under consideration; and the differences of opinion between the parties to the dispute are by no means all due to selfish or parsimonious motives; in most instances we believe they may be referred to radical differences in their conceptions of the purpose and function of the high school.

No high school should be built on less than a five-acre plot. If the school is not large enough to require so much at present, it will grow to it in a comparatively short time. If such growth is not probable, perhaps a mistake was made in the organization of the school in the first place, and is now continuing to be made in maintaining it. It might be in the interest both of economy and efficiency to disorganize, put the funds into transportation, and send the children to schools where there is more life, better courses, and larger activities.

While the five-acre plot is the smallest site upon which any high school should be erected, and may be taken, roughly, as a unit for schools of less than one hundred pupils, five acres more should be added to this for every additional one hundred pupils, up to approximately a twenty-five-acre tract. An agreement among the teachers of the state on these matters, with a few good, convincing reasons for our faith, would accelerate the public acceptance.

There are two reasons for locating the school centrally, viz.: (1) The convenience of the pupils in attending; and (2) The use of the school and grounds as a civic center. The two objections to the central location, which are gaining in force as population increases, are: 1. The expense of a central site, particularly in the cities; and 2. The continuation of the unvaried contact with crowded city conditions. It is a good thing for city children to have daily relief from the din and rattle of the street. With our transportation facilities and the legal provision for paying the bills, transportation is no longer a serious problem.

The State Building Competition

By FREDERICK JENNINGS

THE jury in the competition for a State building to be erected in the San Francisco Civic Center has completed the first half of its unenviable task. From a total of fifty-two drawings, submitted by as many firms of architects in the State of California, the board has selected eight, whose authors have been asked to enter revised or new plans in a final stage of the competition, which will close February 15th. The fortunate ones are Charles Peter Weeks, Lewis P. Hobart, Loring P. Rixford and John Baur, Wood & Simpson, Bliss & Faville, Bakewell & Brown, and Wm. C. Hays, all of San Francisco, and F. J. Delongchamps of Reno, Nev., who holds a California State license.

There are a number of good architects who are known to have submitted plans, but whose names do not appear in the charmed circle. It may be their drawings were not up to the usual high standard of work turned out by them. We have not seen the plans, so must take the jury's word for it—that they were not deserving of special mention. It is to be hoped that sooner or later all the drawings will be placed on public exhibition.

There has been some criticism because not a single contestant from Los Angeles was named for the final competition. But that is no fault of the jury, since there was no possible way of telling the authorship of the plans until after the sealed envelopes had been broken following the selection of the eight winners.

There has been some criticism, too, on account of the known tendency of one member of the jury to admire the style of a certain firm of architects whose work will be entered in the closing stage of the contest. Some think that an entire new jury should be named, same to be composed of architects outside the State of California. Doubtless each member of the fortunate eight would be only too glad to pay something toward bringing to the coast one or more reputable Eastern architects to act on the jury that is to make the final award.

* * *

Urges More Color in Architecture

THE complaint that our American urban architecture, while beautiful as to form and ornamentation, lacks painfully in color is heard again, this time from one Jerome S. Blum, a painter but recently returned from the Orient. To an interviewer who waited on Mr. Blum in the interest of one of the daily newspapers that interesting gentleman is quoted as saying:

"A big renaissance is coming in the United States. We are moving that way, but it will not come until we learn to love color, life and gaiety more. Everything is so gray, so drab. Look at an American city. Look at our architecture, huge piles of stones, ugly, uninspiring—the sight pains me. I look to see color in our building; then I shall begin to hope for us!"

"Pink skyscrapers?" interposed the interviewer.

"And why not?" he asked, vehemently. "Everything should be a blaze of color. Artists should design the buildings. Pink notes could be introduced and little green shutters and red roofs and purples—our clothing should be brighter. Men should not go so somberly clad ——" He broke off as though the idea was too much for him.

"Something big is coming to the United States as the result of the war," he continued. "Daring spirits will seek encouragement here. We must be sym-

pathetic. Europe is depleted. You ask what of the new art? Well, the art of today expresses the life of today. Much of it is heretic; chaotic; much of it will not last. It is tentative. A great deal will be discarded. Your little so-called futurists, cubists and vorticists, those who disguise their lack of ability by sensational paintings, are retarding the modern art movement. They are the men who haven't the power to do a real thing and so their works are described as 'naif,' 'chic.' Bah!" Mr. Blum spat out the word disgustedly.

* * *

If Mr. Blum has his way, muses the Builders Guide, our architecture will go in strong for color. We shall have skyscrapers in mauve and old rose, country houses to match in shade milady's gown, great modern hotels whose exterior color schemes will follow from season to season the prevailing modes. Our cities will resemble a Persian rug, our suburban communities a riot of contending tints. It will be disconcerting after the drabness and austerity of colonial tradition, but it will be art—the new art,—with a capital "A," and everybody will be happy, including, we may suppose, Mr. Blum.

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Factory Building Vibration

BUILDING vibration has an evil effect on occupants, machines and output and to a certain extent upon the structures themselves. With the idea of determining the actual conditions, a Boston firm has been seeking information from professional men and manufacturers, and although a comprehensive report has not yet been issued, certain information has been issued in a preliminary report which indicates some of the features of this problem. The replies to the questions sent out are widely divergent in experience and opinion, but the conclusions are interesting as indicated by the following abstracts of the report:—

The effect of coincidence between the natural frequency of vibration of a floor and that of a source of disturbance is well illustrated by the following experience in connection with the testing of a small engine upon a floor of timber construction: At a speed of about 550 r. p. m., the intensity of the floor vibration was so great that it was impossible to work in the draughting room located on the same floor more than 100 feet away; but this effect entirely disappeared when the speed was either increased or decreased by about 50 r. p. m. When the disturbing force is represented by a number of machines at practically the same speed, the effect may be like that of dancers upon a floor or soldiers marching over a bridge, and prove most destructive to the entire structure if the step time coincides with its natural pitch.

Obviously, most vibrations are the result of several components, and records must be made of not only the vertical but also the horizontal components, both longitudinally and crosswise of the building. Vibration recorders are modeled on the principle of the seismograph; the three-component type developed by Maurice Deutsch of New York and Prof. Elmer E. Hall of the University of California is much lighter than the ordinary seismograph, thus rendering it capable of recording vibrations of higher frequency. The records are made on a rotating drum covered with smoked paper by a recorder which separates a given vibration into three components, two horizontal components at right angles to each other and the vertical component. These three components are recorded simultaneously.

Obviously, the type of construction and the extent to which it permits or prevents vibration must be considered. The context of many of the quotations which have been selected referred to buildings, usually old, entirely unsuited to the requirements. Hence the resulting vibrations. Other correspondence shows with equal clearness that the absence of vibrations is due to the rigidity of the structure, to foresight in the placing of certain machines on solid foundations, to the proper cushioning of others and such arrangements of duplicate machines operating at the same speed as to avoid cumulative effects.

The general experience is that severe vibration tends to tire the workmen and make them nervous, with the result that they become irritable and inefficient. The plant manager of a large concern says that he has had four different clerks leave because they could not stand the vibration of the building. During the past nine years, about eight or ten men left because they found they could not do a day's work on the chipping hammer floor because of vibrations.

An instructive contrast in conditions and results is shown in a letter from a consulting engineer. A mill in which weaving apparatus was originally located was of the old-fashioned type, but rather light, and the looms could not run more than 120 picks per minute without serious difficulty with breaking threads. In the new plant the design speed was about 145, but through error it was made 160. When the plant was started, in spite of the superintendent's vigorous complaints, no trouble was experienced, and the mill is at present running at this speed with less loss, so far as breakage is concerned, than was experienced in the old mill at far slower speed, and, of course, with greatly increased output. It is claimed that this was owing solely to lack of vibration.

Solid foundations apparently insure greater output. A case is cited of one machine which was first placed directly on the floor and vibrated very badly. To overcome this vibration, the floor was cut away around the machine and a foundation put under it. The increased output is claimed to be almost 40 per cent, due to the fact that the operator can take measurements with the machine running when there is no vibration, but was unable to do so where the vibration was so great. Apparently the quality of the work is also considerably improved. An engineer says that perhaps one of the reasons why some of the English and other foreign fabrics are better than American fabrics is that greater attention has been given to the construction of their mill floors, which are surprisingly free from disturbing vibrations.

The general effect of vibrations in machine shops is clearly expressed by the following quotation: "With the heavier tools, where there is an excessive amount of vibration, the depth of the cut is limited, and we cannot use the full power of the tool. It produces a sort of chattering which marks the work and limits the amount of stock which can be removed in one cut." An industrial engineer states that there is one point where the vibration of buildings is not considered sufficiently, and that is in transmission of power by shafting. The losses caused by vibration in such transmissions are considerable.

The trouble caused by reciprocating machinery may be eliminated by proper cushioning or bracing. Where machinery creates more or less vibration due to shock, an effort should be made to use either a massive construction to absorb the shock or else put in direct supports which will transmit the vibration to a point below the foundation. Statements regarding the comparative merits of different types of construction cover a wide range of experience and opinion. In the case of a knitting mill in which considerable trouble with combination steam and joist construction buildings was experienced, it was found that buildings of modern reinforced concrete having heavy machines on the first and second floors showed no sagging, nor is any vibration noticeable.

The replies include a great number of statements from consulting and designing engineers, ranging from the opinion that there are no material advantages in a reinforced concrete building to the following: "The owners had some mill construction buildings in use before we built the reinforced concrete buildings. Some sections of the former vibrated like drums, but we believe the concrete construction has proven quite free from vibration."

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Judges for Poster Cover Competition

Arthur Brown, Jr., Charles Peter Weeks and Frederick H. Meyer, all prominent San Francisco architects, will comprise the jury that will award the prizes in The Architect and Engineer cover design competition which will be decided soon after the New Year. A large number of draughtsmen throughout the State have applied for the programme. After the award has been made, all the drawings will be placed on public exhibition at the Building Material Exhibit, 77 O'Farrell street, San Francisco.

Proper Methods for Laying Oak Flooring

By W. L. CLAFFEY of Chicago.

TODAY, by improved machinery, equipment and quantity manufacture, the cost of making flooring has been so reduced that beautiful oak floors are now within reach of everyone.

Oak flooring is generally laid by a profession commonly known as floor layers, who specialize in the laying of hardwood floors. These floor layers may be divided into two classes—good workmen and a class that are careless. The expert floor layer obtains his reputation by the high class and perfect work that he turns out. It is practically his only asset in the game. Many large and prosperous floor laying concerns have reached their prosperous condition chiefly through conscientious workmanship in their earlier days. The floor layer that is careless in his work will never succeed.

It is not necessary to be an expert to produce a good floor laying job, but it is very essential that considerable care should be exercised and all the details from the very start to the finish should be carefully studied before the floor laying work is taken in hand.

Before starting to lay oak flooring, the stock should be examined to ascertain if it has absorbed any moisture while at the lumber yard, on the wagon, or at the job, as usually during rainy weather oak flooring will absorb considerable moisture, mostly at the ends—thereby causing it to swell as much as one-sixteenth of an inch. If this condition is not discovered before the floor is laid, unsightly crevices will appear in the floor. The sub-floor, as well as the plaster work, should be thoroughly dry before starting to lay oak floors. If in winter, the rooms should have a temperature of about 70 degrees to insure the best results and the oak flooring bundles should be in the rooms at least ten days to thoroughly dry out in case the stock has been subjected to any moisture, before the main work is started.

Oak flooring leaves the mill in perfect physical condition, but is very often abused by improper handling before it reaches the job. There are many lumber yards and contractors that treat oak flooring almost like rough lumber. This is a mistake.

The sub-floor should be thoroughly swept and it is well to use a dampproof paper, and where sound-proof results are desired a heavy deadening felt is recommended.

The sub-floor should be of serviceable wood, but not less than seven-eighths inch thick, dressed one side to an even thickness. Sub-floors should be nailed securely to the joists, but not driven too tight together, so as to permit it to swell, then bulging. Four-inch to six-inch strips are preferred widths for sub-floors.

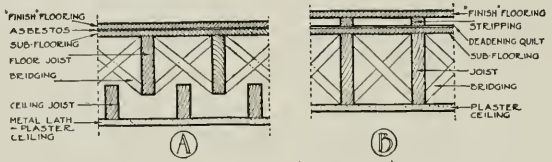
When starting with the first oak flooring strip, it is well to leave at least three-eighths inch for expansion space between the first strip and the base-board, and likewise at the other end of the room, as there is more or less expansion and contraction in all kiln-dried oak flooring.

Oak flooring should always be laid at an angle to the sub-floor and after laying and nailing three or four pieces, use a short piece of hardwood 2 inches by 4 inches placed against the tongue and drive it up with a heavy hammer.

The nailing of oak flooring is very important. All tongued and grooved oak flooring should be blind-nailed. The best flooring made can be spoiled

by the use of improper nails. The steel cut variety is recommended for thirteen-sixteenths-inch stock; use eight-penny nails every sixteen inches. For three-eighths-inch flooring use three-penny wire finishing nails every ten inches. If even better results are desired, the nails can be driven closer.

The floor layer should use discretion in regard to certain strips that do not blend in color with the majority of strips. A few badly discolored pieces in a room will mar the appearance greatly. Badly discolored pieces should always be set aside and used in closets and other out-of-the-way places. Where there is a wide variation in color, it is good policy to separate the pieces before they are nailed down. This insures a more regular run of color and blends better together than if scattered throughout all



TWO WAYS TO DEADEN A FLOOR

the rooms. Every floor layer should watch this feature of his work closely, as it is the appearance of the floor after laid that counts.

Oak floors, with some care, should last a lifetime, and it is for this very reason that all floor layers should be very particular when they lay oak flooring. The wood itself practically is never permitted to wear—that is, in the better grades that are used in homes. It is the wax or varnish finish that wears, which is always replenished. Honest and careful workmanship on the part of the floor layer spells success. A good job of floor laying is the best of advertising, while a poor job gets nothing but kicks and no reward.

Scraping oak floors is always done in the better grades, or in all homes where people dwell. In order to get the best results for a nicely finished surface, it is best to scrape it. This scraping process can be done by the ordinary scrapers, such as used by cabinet makers, or by one of the many types of power or hand machines that are generally used by contractors and carpenters. Always scrape lengthwise of the wood and not across the grain. A floor properly scraped looks very smooth, but it should be thoroughly gone over with No. 1½ sand paper to obtain the best results in finishing. After this the floor should be swept clean and the dust removed with a soft cloth.

The floor is now ready for the filler, which should be put on as soon as possible after the laying work is finished, as the filler fills up the pores of the wood and keeps it from shrinking.

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Six-Story Office Building

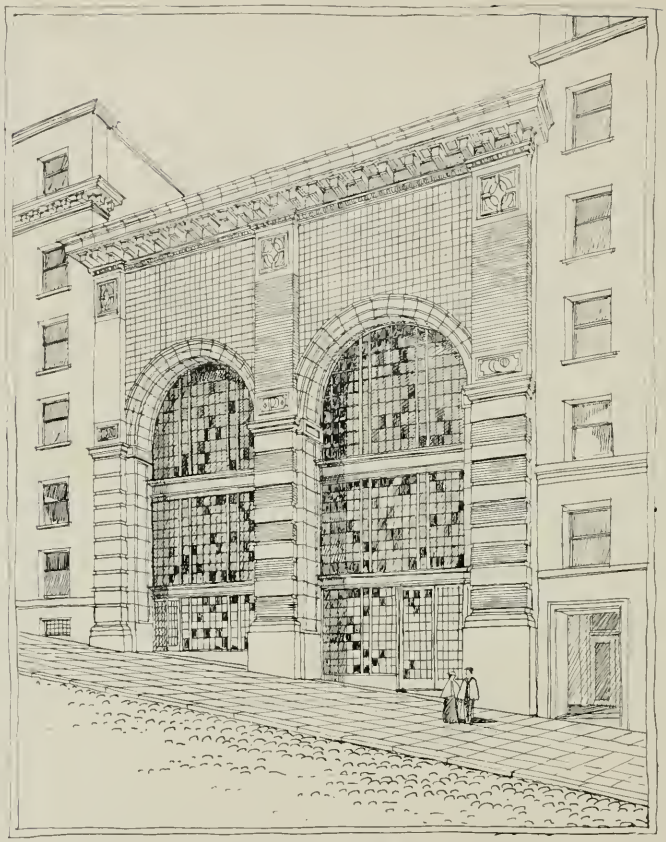
Plans are being prepared by Frederick H. Meyer of San Francisco for a six-story Class A office building to be erected on Montgomery street, between Pine and California, for the Pope Estate. The building has been leased to the San Francisco Bond and Stock Exchange, which is at present housed in the Merchants Exchange. Construction will be of steel, brick and terra cotta and more than $100,000 will be expended on the improvements.

The Finest Buildings in the World

AFTER all, the finest buildings are not those designed on our draughting boards and fashioned with our hammers and trowels.

Finer than all these are the ideals we work for, the friendships we build and the lives we lead outside of the working hours.

Once a year at the Holiday season, it is our privilege to leave behind for a moment the buildings of business and to wish for you and yours, during the next year, success and prosperity in the building of these finer things which endure for all time.



POWER STATION FOR GREAT WESTERN POWER COMPANY, SAN FRANCISCO
W. Garden Mitchell, Architect

The Window Garden

The holiday season sees the florists' windows filled with flowering and foliage plants in great variety. All of these are available for home use in windows or living-rooms for a longer or shorter time. The Christmas reds are likely to predominate up to that holiday, but thereafter many other colors are shown. The flowering Begonias of the Gloire de Lorraine type are particularly attractive and make beautiful plants for the dining table.

Among the least expensive and most attractive of the plants now available are the started bulbs. Hyacinths, tulips, daffodils, and many other sorts of Narcissus may be purchased for a small sum, the only care needed to bring them into perfect blossom being an occasional watering. Such bulbs are readily transferred to water-tight flower jars in which they may be placed anywhere on shelf or table.

The Preservation of Buildings

By C. F. MAUER*

AS a very large per cent of our national wealth is represented in buildings of various types, classified and defined as homes, office and business blocks, hotels, financial centers, factories, educational institutions and tabernacles of religious worship, it is the writer's object to impress upon the minds of the architects, builders and property owners the importance of conserving these assets and resources with the same vigilance as those represented by legal-tender or its equivalent.

Time, money and energy have been sacrificed in perfecting our present efficient methods of preserving fruits, vegetables, meats and cereals. Nation-wide campaigns have been instituted for the prevention of fires. A national association of credit men was organized solely for the purpose of conserving the finances of the mercantile establishments that transact business on a credit basis. Financial institutions are doing everything in their power to assist the common people in saving part of their earnings so as to improve their financial conditions and independence. Streams are dammed to conserve the water supply and transform the desert into a garden. But—what is being done to overcome the destructive effects of the elements on our buildings?

The destructive forces which every structure must combat are the elements and a law of nature (transformation)—the continual changing of every material object from one formation into another. Moisture, wind, sun, the seasons and time will transform every visible object upon the face of the globe. To preserve and maintain the original appearance and condition of any building perpetually is a physical impossibility; it is contrary to every law of nature. But to permit any building to stand exposed to the elements without protecting it against the destructive effects of rain, wind and sun is a crime against one's own best interests and the conservation of property. The remedy is simple—it means only the elimination of absorption (capillary attraction).

Architects, engineers and builders may specify and use the very best materials of their respective kinds, may employ only first-class mechanics who perform their duties to the best of their knowledge and ability, and yet, within a short time, the building will leak, disintegrate and decay, whether it be a stone, brick or cement structure. Why is it? It is not the material; it is not the workmanship; it is not the inefficiency of the architect or builder. It is the absorptive nature of the building material itself, for which no one is responsible; it is a law of nature.

You may invest a million dollars in the construction of a solid stone edifice. From an artistic standpoint the building may be perfect. The materials used in the construction may be the best that nature provides, carved and finished by skilled workmen and constructed by mechanics who have no superior in their profession; but, unless the basic cause (absorption), is destroyed in the stone and joints, it is only a question of a few years until disintegration or decay sets in, which destroys the attractive appearance of the building. In the span of a lifetime the stone may become worthless, where it should remain intact for centuries. Failure to destroy absorption is the direct cause of its early decay.

Suppose you are the proud possessor of a brick mansion which represents an investment of fifty thousand dollars. It is completed just before the rainy season. You admire its beauty and artistic design, its uniform color and general appearance. The interior decorations represent your own original artistic ideas. You are more than pleased with the results of your efforts; but, alas, the rain

*Business Manager, The Imperial Company, San Francisco.

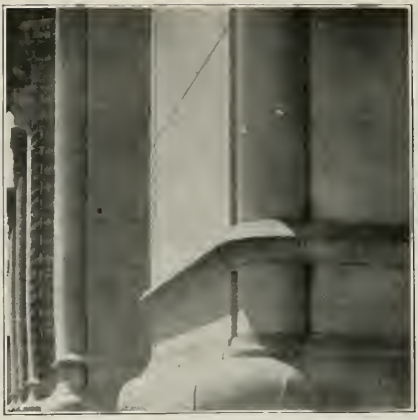


Fig. 1.

Fig. 2.

Fig. 1—*Section of natural stone building waterproofed and preserved. Note perfect condition of stone.*

Fig. 2—*Same kind of stone as shown in Fig. 1, but not treated. Note disintegration.*

comes, and there is daily precipitation for weeks—sometimes for a whole month. The brick at first thoroughly dry, is craving for moisture (as a dry and parched tongue); every drop of water which strikes it is readily absorbed, paving the way for the next one that follows to penetrate deeper and deeper, until finally the water percolates freely through the new brick walls, regardless of what its structural thickness may be. The result: All interior decorations are spoiled; your new mansion is unsanitary, not fit for occupancy, due to its dampness. Along come April and May, the rainy season is over, the moisture evaporates, the bricks begin to dry, and to your great dismay and surprise white bloom and

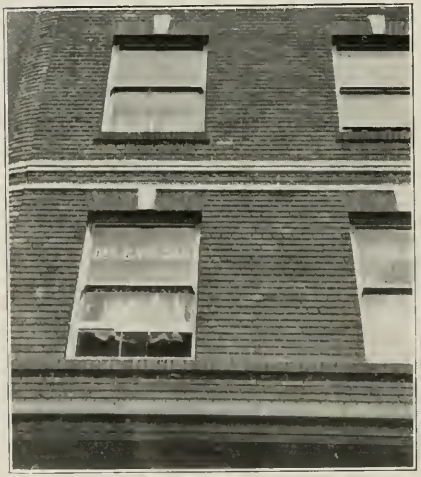


Fig. 3.

Fig. 3—*Section of red brick building, waterproofed and preserved. Note perfect condition and color of brick.*

Fig. 4—*Section of red brick building not treated. Note alkali discoloration.*

Fig. 4.

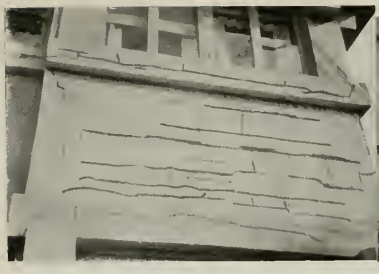


Fig. 5—*Section of cement-plastered residence. Note defects due to absorption of water.*

Fig. 6—*Section of same residence, waterproofed and preserved.*

efflorescence make their appearance on the surface. What a difference in the appearance of your mansion, both inside and out, in the short duration of one year—all due to the failure of destroying the power of absorption of the brick itself.

You may erect a frame bungalow and finish the exterior with lath and plaster, or a reinforced concrete structure with exterior cement finish; but, unless the power of absorption is destroyed, moisture will penetrate the walls, causing interior dampness, forcing cracks to develop on the exterior, due to expansion and contraction, in some instances destroying the bond between the plaster and the structural walls. No one connected with the designing or construction is responsible for your material absorbing water; it is the method, and the responsibility should rest on the designer should he fail to specify and see that his instructions are carried out to the letter—namely, that each and every building constructed of masonry be properly treated to destroy absorption (capillary attraction).

It is only a waste of money and a crime against property to allow water to percolate through the walls and floor of any basement, when the condition (where the structural wall is strong enough to withstand the water pressure), can be entirely relieved by plastering the walls on the interior in the customary way, and simply adding a chemical solution to the mortar which will destroy absorption, not permitting the water to penetrate the plastered surface.

The accompanying illustrations reproduced from actual photographs make a forceful demonstration. In one series of pictures you see the damaging effect of the elements on stone, brick and cement. In the other pictures (taken after severe time test) you see the same building materials in perfect condition, due to being properly waterproofed and preserved.

* * *

To Select Architect for Australian Building

A copy of the program for the international competition to select an architect for the Federal Parliament House at the new capital city of Canberra in Australia has been forwarded from Sydney by Consul General J. I. Brittain. The government has resumed the competition, and extended the date for receiving the designs in either London or Melbourne from March 31, 1915, to January 1, 1917. The Federal Capital Director of Design and Construction is Walter Burley Griffin, whose address is Department of Home Affairs, Federal Capital Office, 84 William street, Melbourne, Victoria. A copy of the pamphlet giving full details of the competition may be inspected at the Bureau of Foreign and Domestic Commerce, or its district offices. Refer to file No. 81211.

THE
Architect and Engineer
OF CALIFORNIA

Founded in 1905 by E. M. C. WHITNEY

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Published Monthly in the interests of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by the Architect and Engineer.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

TERMS OF SUBSCRIPTION

(Including postage) to all parts of the United States $1.50 per annum; to Canada 50c additional; to all Foreign points $1 additional.

VOL. XLVII. DEC., 1916 No. 3

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THE ARCHITECT AND THE STUDENT

One of the complaints, which, like the poor, we have always with us, is from the art students, youthful interior decorators, architects who are just entering their professional career, etc. They insist that a clerk who has worked in a decorating establishment has more chances of advancement than a graduate of a university who seeks a position in the same establishment; that a draughtsman in an architect's office is more favorably considered by the architect than a man with a diploma from an architectural course or school. There is justice in the accusation. As a rule, professional men, like business men, mistrust and dislike the purely academic cast of mind. If forced to choose between two types, they usually select the man or woman with a practical experience, rather than the one with a wholly theoretical training. At Columbia College they are endeavoring to remedy this obviously wasteful prejudice, which puts a whole class of serious students at a disadvantage at the outset.

The university authorities have invited three New York architectural societies, each to select three practicing architects, to form a committee of visitors. This committee will periodically visit and inspect the school plant, equipment, current work and mode of teaching, and their advice will be received as a guide, a check and a stimulus to the scholastic standards.

An innovation like this, comments House Beautiful, deserves the warmest co-operation. For, in the architectural profession, as in all others, we need the constant blending of theory and practice. Idealism divorced from experience is unreliable: experience unilluminated by idealism too often becomes commercial. A reciprocal relation between the student and the practising architect is tremendously needed. And every one who has the continuing high standards of this profession at heart will watch the new experiment with interest.

CO-PARTNERSHIP BETWEEN ARCHITECTS AND ENGINEERS

Engineers in this country should exert more influence in the development of architecturally pleasing effects in the design of structures than they have done in the past. Frequently the pressure brought to bear upon them by owners or officials of corporations and municipalities who control the design of engineering construction and insist upon mere utility and, sometimes, upon lowest first cost, is hard to resist. It is encouraging to note cases in which this pressure has been successfully resisted and overcome. Engineering work should not be wholly utilitarian. In all cases where natural surroundings require it, where the consistent development of a great architectural plan is possible, or where the presence of appreciative observers is probable, the element of general architectural appearance should be given consideration. We are still far behind European engineers in this respect. Surely the great natural wealth of this country can be better applied in this direction than we have yet succeeded in applying it.—Engineering Record.

Here would seem to be a strong argument in favor of a co-partnership between architect and engineer. The latter needs the artistic temperament possessed by the architect to make his work something more than utilitarian.

A partnership between an architect and a structural engineer often proves an ideal union of the artist and the economist. We have in San Francisco a recent example—the co-partnership of Chas. Peter Weeks and William Day. We venture the prediction that each coming year will witness a marked increase in architectural-engineering co-partnerships.

There are many new forces at work that tend to develop relationships of this sort. To begin with, the increasing wealth of the country leads inevitably toward the construction of larger and better buildings of various types. The financial progress of every nation is always marked by the betterment of both residential and industrial buildings. With larger investments in buildings there comes greater care in selecting the designers. And when an owner gives due thought to this matter, it takes no unusual powers of perception to recognize that it pays to employ a designer skilled in study of building economics—structural engineering.

Educational publicity is playing an important part in convincing owners that it pays to build for permanence. When to the publicity effected by manufacturers of cement, tile, steel, etc., there shall be added the publicity that individual engineers and structural engineering societies can effect, owners will more commonly demand engineering services of high order in the designing of buildings. We believe that this demand will not relate to industrial buildings only, but will involve domestic architecture. Take, for example, the problem of heating a house. Here is an engineering problem of no mean intricacy, yet, as conditions now exist, its solution is usually left to the mechanic who installs the heating apparatus. How many house owners know that the efficiency of the average furnace is less than 50 per cent and that it could be raised to 75 per cent? How many know that the heat lost through the window glass constitutes the greatest drain upon their coal bin, and that double glazing cuts this drain in two? How many know that cheap and defective plumbing not only doubles their annual maintenance costs, but results in a vast waste of water which, directly or indirectly, they must pay for? How many know that, for equal illumination, light-colored interior walls decrease the monthly lighting bills as compared with dark walls? How many realize that white exterior walls in courts and where buildings are close together will eliminate at least one hour of artificial illumination daily? How many know that by building large refrigerators as part of the house they can not only cut ice bills in two, but reduce the cost of all perishable foods by buying in larger quantities?

We have touched but a few of many economies of household operation that are effected by the design of the house, yet they alone would justify employing an engineer in the design of every modern residence.

Engineering and Contracting, published in Chicago, opines that an engineer who specializes in household economics, both of operation and construction, has a better chance of winning clients than has an architect. Together a good architect and a good structural engineer should easily forge ahead of any firm composed only of architects.

Examination for State Engineer

The California State Civil Service Commission announces an examination, to be held in Sacramento, San Francisco and Los Angeles on January 6, 1917, for the position of assistant to the chief engineer, Board of State Harbor Commissioners. The salary is $3,000 per annum.

The duties of the position involve the design and supervision of the erection of structures of reinforced concrete, steel and timber, and familiarity with the fabrication and placing of steel reinforcement, the proportioning, mixing and placing of concrete to give the best results, timber framing and the fabrication and erection of structural steel. The position also involves the supervision of design and construction of piers and wharves and of foundations such as are encountered in the erection of these structures.

Physicians' Office Building

Alfred I. Coffey, San Francisco architect, has completed plans and taken bids for a six-story steel frame office building for the physicians and surgeons of St. Francis Hospital. The estimated cost is $80,000.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Architect Sues Chamber of Commerce

Smith O'Brien, architect of San Francisco, has brought suit against the Stockton Chamber of Commerce and John P. Irish, Jr., secretary, for his fee in connection with the preparation of plans submitted in competition for a memorial to the late Captain Weber of that city. The competition was held the latter part of 1913 and was won by Mr. O'Brien, who asserts he never received one cent compensation for his plans, which were retained by Mr. Irish. The jury was composed of Willis Polk, Clarence Ward and Arthur Brown, Jr., all prominent San Francisco architects. The memorial, if built, would have cost in the neighborhood of $25,000, and Mr. O'Brien, according to the provisions of the programme, was to receive 6 per cent of this sum.

Recognition for San Francisco Architect

Wm. L. Woollett, formerly of Woollett & Woollett of San Francisco and Sacramento, is now in Los Angeles, in charge of the planning of an immense theatre and studio office building being designed in the office of A. C. Martin, architect and engineer, 430 Higgins building, that city. The structure is to be erected on the southwest corner of Third street and Broadway, for the Stability Building company, and will cost approximately $550,000. Construction will be of steel, concrete and terra cotta. The theatre portion will seat 3000 persons, and will be the largest moving picture house in the southern city. The front portion of the building will be twelve stories in height, and will contain studios and offices for artists.

Attended A. I. A. Convention

Among the California architects who attended the convention of the American Institute of Architects at Minneapolis this month were John G. Howard, William Mooser, Wm. C. Hays, W. B. Faville and John Bakewell, Jr., of San Francisco, J. E. Allison, Pierpont Davis, Octavius Morgan and Albert C. Martin of Los Angeles.

Much State Work Coming

At a recent session of the directors of the California State Agricultural Society tentative plans were submitted by State Architect George B. McDougall providing for the erection of substantial new buildings and improvements to cost $1,000,000. A main agricultural pavilion to take the place of the one recently destroyed by fire in the Fair Grounds, Sacramento, will be the most important structure in the group. It will be 150 by 500 feet and of fireproof construction. The estimated cost, with galleries, will be approximately $350,000. Other improvements under consideration include an educational pavilion to house university and school exhibits, $60,000; grand stand, $185,000; extension to manufacturers' building, $40,000; extension to machinery hall, $40,000; coliseum for night horse shows, lectures, etc., $100,000; stock barns, new road, beautification of grounds, etc., $85,000.

Los Angeles Engineers and Architects

A meeting of unusual interest to the members of the Engineers and Architects' association was held at Hotel Clark during the early part of November. Rev. Ralph B. Larkin of Ontario, Cal., gave a lecture on "The Story of Radium and Its Meaning to the Scientific World."

A committee consisting of Messrs. Octavius Morgan, Frank D. Hudson, and John P. Krempel, also G. O. Newman and E. L. Swaine, was appointed to select names to be placed in nomination for officers for the ensuing year.

New Buildings for Mills College

Messrs. Dickey & Donovan, Perry building, Oakland, have been commissioned to prepare plans for a group of new buildings for Mills College, Fifty-ninth avenue, East Oakland. With one or two exceptions, the buildings now standing are out of date. Messrs. Dickey & Donovan will make plans for new structures to be built along lines similar to the University of California. Eventually more than $1,000,000 will be expended in new construction work.

The Building Outlook for 1917

Architects throughout the Pacific Coast are optimistic over the building outlook for 1917. It has every promise of being a banner year, especially from an industrial standpoint. New manufacturies and additions to the present plants will mean an expenditure of many millions of dollars. It is said that San Francisco and Oakland alone will spend more than $10,000,000 on new factories. Reports from Southern California are equally hopeful.

A number of reasons are given for this remarkable industrial activity. The war has compelled our people to rely more and more upon their own resources and many articles that have heretofore come from abroad are now being made at home. An unprecedented car shortage and the high freight rates have also had a decided influence toward stimulating local manufactory.

Looking forward, the year 1917 will doubtless witness the construction of an immense assembling plant on the old Emeryville race track for the Ford Automobile Company, a project that will involve $1,000,000 or more. The California Cotton Mills has announced its intention to build a four-story concrete and brick addition to its plant in East Oakland, at a cost of $500,000.

Plans have been completed and contracts let to the Dinwiddie Construction Company of San Francisco for the erection of a $500,000 reinforced concrete mill, warehouse and office building at Vallejo for the Sperry Flour Company. Plans have also been completed for a four-story reinforced concrete factory to be erected in San Francisco for the Ever Ready Dry Battery Company. M. C. Couchot, C. E., planned both of these plants.

The Briscoe Automobile Company has announced its intention of spending $100,000 for a complete assembling plant to handle the coast output of the Briscoe motor car. Plans for this building are being prepared by Architect B. G. McDougall of San Francisco. Architects Alfred Kuhn and Edward G. Garden have completed plans for a four-story mill construction brick factory to be erected on the southwest corner of First and Folsom streets, San Francisco. Work has just been started on a four-story reinforced concrete warehouse and sales building for the Goodyear Rubber Company, the plans having been prepared by Engineers MacDonald & Kahn. The Spreckels Sugar Refinery Company is securing options on 6000 acres of beet sugar land near Manteca, in the San Joaquin Valley, and the coming spring the company plans to build a $2,000,000 refinery.

The California Packing Corporation is the name given to a giant merger of the various canning companies on the Pacific Coast with the Alaska Packers Association, and this new corporation has announced its intention of building during the year a central canning plant on the inner harbor adjoining the plant of the Union Iron Works, Oakland harbor.

In San Francisco commercial and financial circles there is the same activity in building revival as in the industrial line. Plans are being prepared by Architect George W. Kelham for a nine-story bank and office building to be erected at California and Montgomery streets, the heart of San Francisco's financial district, for the American National Bank. Probably not less than $500,000 will be expended on this improvement.

At the lower end of Market street, within a stone's throw of the Ferry building, the Southern Pacific Railroad Company has started construction of a ten-story class "A" office building—the largest of its kind west of Chicago. It will cost approximately $1,250,000, and will house the company's thousand or more employees now scattered in various buildings throughout the city. The building is to be ready for occupancy in August, 1917. A notable feature in connection with the building of this structure is that practically every bit of material used will be a California product.

In the immediate neighborhood of the Southern Pacific building, the Matson Navigation Company will build a ten-story class "A" office building for the various coast shipping interests. Plans for this structure are now being prepared by Architects Reid Bros., California Pacific building.

The Hobart Estate Company contemplates duplicating its tower-like office building on Market street, near Montgomery, from plans by Architects Willis Polk & Company. The addition will rise to a height of seventeen stories, and will double the capacity of the present Hobart building. Besides these projects there are a number of smaller office buildings contemplated as well as several high-class apartments and moving picture theatres.

The competition for a $1,000,000 state building to be erected in the San Francisco Civic Center is now being conducted by the State Advisory Board at Sacramento.

Two Oakland Branch Libraries

Messrs. Dickey and Donovan of Oakland have been commissioned to prepare plans for two branch Carnegie libraries for the city of Oakland. Each will cost $35,000. One will be built at Golden Gate and the other at Alden.

Record Year for Building

Despite the steadily advancing cost of material and labor, 1916 will go down into history as a record year for building activity.

Building trade activity surged forward in October, and values of buildings permitted for in that month showed a large gain over October a year ago, a month which in turn showed a very heavy gain over the like period two years ago. Returns to Bradstreets from 141 cities roll up a total estimated expenditure never before equalled in that autumn month. Following are the October and ten months' records of building expenditure for six years past:

	October	Ten Months
1916.....	$82,951,962	$847,395,894
1915.....	66,494,787	685,755,778
1914.....	52,535,818	697,223,189
1913.....	66,141,492	759,266,333
1912.....	73,128,886	787,604,000
1911.....	66,746,617	731,762,927

The ten months' expenditure so far outlined, with a number of cities yet to hear from, exceeds that of the entire year of 1915 and is 7.6 per cent greater than that done in the best year hitherto reported—1912.

Contract for Big Yosemite Hotel

Gutleben Brothers, New Call building, San Francisco, have been awarded the general contract for the construction of a large tourist hotel in the Yosemite Valley for the Desmond Park Service Company of San Francisco. Actual construction will not begin until spring. The same contractors are completing a smaller hotel at Glacier Point. Plans for both buildings were prepared by Edwin J. Symmes, Pacific building, San Francisco.

More About New Sugar Refinery

The directors of the South San Joaquin Irrigation District have approved the proposition of the Spreckels Sugar Company to build a $2,000,000 refinery at Manteca. Permission has been granted the Spreckels Company to discharge water from its proposed plant into the district canal. The project is now sufficiently developed to insure actual building construction within a period of six months.

Briscoe Assembling Factory

The Briscoe Automobile Company will build an assembling factory in San Francisco. The location is now under consideration as are also preliminary plans by Architect B. G. McDougall. A building to cost $80,000 is contemplated. Construction is to be of reinforced concrete, with steel sash throughout. The matter is in the hands of W. L. Hughson, of Hughson & Merton, Inc., distributors of the Briscoe car.

Architect Becomes Benedict

Friends of Henry F. Withey, Los Angeles architect, have received cards announcing his marriage to Elise Dickinson Rathburn at Woburn, Mass., on October 14. They will be at home in Los Angeles after May 1 next. Mr. Withey recently returned from an extended visit to Boston and other eastern cities, but the card announcement is the first inkling his friends have received that he had become a benedict.

Oakland Hospital

Plans are being prepared by Charles W. McCall of Oakland for a fireproof hospital for Dr. M. M. Enos and his associates, who control the St. Anthony Sanitarium at 827 Brush street. The new hospital will be on Grand avenue, near Bellevue street, Oakland, and will cost $75,000. There will be accommodations for sixty-five patients.

Apartments and Garage

E. P. Antonovich has moved his architectural offices from the Monadnock building, San Francisco, to 20 Montgomery street. Mr. Antonovich has considerable work in prospect, including a four-story brick apartment house for Dr. S. J. Hunkins and a concrete garage for Van Ness avenue, to cost $40,000 and $18,000 respectively.

$250,000 Home

Carleton M. Winslow of Los Angeles is completing the working drawings for a $250,000 residence for William H. Bliss to be built at Santa Barbara. It will be built of brick with plastered exterior, clay tile roof and reinforced concrete floors. The design is Spanish Renaissance.

Report of Capital Planning Commission

The California State Capital Planning Commission has recently had printed its report of an investigation of the planning of the Capital of California. Copies may be had by applying to the secretary of the Commission, Sacramento.

Oakland Commercial Garage

Preliminary plans have been prepared by Walter D. Reed of Oakland for a one-story brick commercial garage, for W. E. Hite of 420 Twenty-fifth street, Oakland. Building will be built at Twenty-third street and Grand avenue and will cost $30,000.

New Architects

Certificates to practice architecture in California have been granted by the State Board of Architecture to C. Howard Hopkins, Frederick H. Kennedy, Jr., and James C. Simms, all of Los Angeles.

Orpheum Theatre Alterations

G. Albert Lansburgh, Gunst building, San Francisco, has taken bids for alterations to the Orpheum theatre, San Francisco. A new stairway to the balcony will be included in the improvements.

The same architect has started working drawings for extensive alterations to the store and loft building at Geary and Grant avenue, San Francisco, owned by Morris Meyerfeld. This building has been leased to Livingston Brothers, who will occupy it with their present building.

Working drawings have been completed by the same architect for a two-story and basement residence to be erected on the northwest corner of Washington and Laurel streets, San Francisco, for Fred B. Henderson. The house will be in the Italian style and will be of semi-fireproof construction.

$40,000 Brick Factory

Plans have been completed by Alfred Kuhn, architect, and Edward G. Garden, associate, Phelan building, San Francisco, for a four-story brick factory building to be constructed on the southwest corner of First and Folsom streets, San Francisco, for the Catherine Dunne Company. The building will be 75x100 feet, with foundations sufficiently strong ultimately to carry two additional floors. Construction will be of the heavy mill type, with brick walls, wood beams and floors. The front portion will have plate glass windows, and the entrance vestibule on the corner will be finished in marble and tile. Exterior will be of pressed brick. There will be a large freight elevator.

Addition to the White House

Soon after the first of the year extensive alterations will be commenced to the building at the corner of Post and Grant avenue, now occupied by the Hastings Clothing Company, which latter concern will move to the building at the corner of Kearny and Post streets, San Francisco. The structure at Post and Grant avenue is three stories, and is directly south of the White House. It is planned to connect the two buildings and convert the Hastings building into a children's department for the White House.

Monterey Church Will Cost $80,000

The new church for the Catholic Diocese at Monterey, which is being designed by Architect Smith O'Brien, Humboldt Bank building, San Francisco, will cost from $80,000 to $100,000. Construction will be on Mission lines and fireproof materials will be used. The walls will probably be of hollow tile, with exterior finish of white cement. A clay tile roof will probably be used. The seating capacity will be 900 persons.

Richmond Architect Busy

James T. Narbett, 910 MacDonald avenue, Richmond, sends us the following information:

Plans are complete for a dormitory hotel, two stories, to be built for the Union Oil Company of California, at Oleum. Estimated cost, $22,000.

A contract has been let for a one-story building at Richmond for J. A. Parysek.

Bids were opened December 4th for a two-story and basement high school unit to the present Richmond Union High School. Estimated cost, $25,000.

Plans are finished and work will be done by day labor, for a one-story reinforced concrete store building for W. A. Morehead in Richmond. Estimated cost, $4500.

Dynamite Under Architect's Home

Melville H. Schwartz, of Heiman & Schwartz, architects, with offices in the Nevada Bank building, San Francisco, experienced a rather unpleasant sensation one morning recently, when he discovered eighteen sticks of 40 per cent dynamite under the front porch of his Pacific avenue home. Preparations were being made to excavate for contemplated improvements. Mr. Schwartz was at a loss to explain the presence of such a large quantity of explosive unless some workman placed it there for safe keeping.

Winner of House Competition

In a recent competition conducted by House Beautiful for plans for a model $3,000 home, first prize for the States of Oregon, Washington, Idaho and Montana was awarded to Messrs. Jas. H. Schack and Paul F. McAlister of Seattle; second prize to E. T. Heitschmidt and Fred A. Fritsch, Portland; third prize to H. A. Angell, Portland, and fourth prize to J. J. Stanton of Portland. The jurors were Morris H. Whitehouse and Albert Sutton of Portland and David J. Myers of Seattle.

Additions to Los Angeles Chapter

Messrs. Lester H. Hibbard, H. H. Cody, Mott Montgomery and Ross G. Montgomery have been elected to membership in the Southern California Chapter, A. I. A. Mr. A. F. Rosenheim reported at the November meeting that thirteen Chapter members had made application to become members of the Institute and that at least six more applications were expected.

Not Any

A classified advertisement in the Chicago News reads: "Wanted—A man to sleep in undertaker's place. Will make it interesting for the right party." Not for us, you won't.

Electrical Department

Decorative Flood Lighting of Formal Landscape

By GLENN MARSTON, in Lighting Journal.

UP to the present time the use of flood lighting has been confined mainly to the illumination of public buildings and monuments. A new field for flood lighting has been opened, however, by its use in the illumination of the Italian garden on James L. Breese's Long Island estate.

The garden is nearly half a mile long, and about 500 feet wide. It is divided into an inner and an outer garden, the inner garden being next to the house, and bounded on three sides by pergolas. The arrangements for lighting were made so that no light sources were visible at any time to a person facing away from the house, and only one lamp at a time is visible to spectators even when walking toward the house.

The inner garden is somewhat more elaborate than the outer garden, which is not seen from the house, except for the central walk, at the end of which is a large marble vase, flanked on either side by marble statues. In the center of the inner garden is a marble fountain designed by Janet Scudder. Surrounding the fountain are four fifteenth century Italian sculptures, and the long path is also embellished with sculptures along its entire length. There are also a number of marble benches in the garden, but as these were so placed as to be in secluded spots, they did not become a factor in the plan of illumination.

It was the desire of Mr. Breese that the lighting should not be too brilliant. It should not imitate moonlight, but it should not be so far removed from the suggestion of moonlight that it would be disturbing to the spectators whose preconceived notions of night illumination included nothing but moonlight.

It is the belief of the layman that moonlight is blue, while the fact is that it is pretty close to white. Owing to this conventional belief, it was decided to color blue all light which fell on the architectural features, i. e., the pergolas in this case. In experimenting with the sculptures it was found that the marble lent itself so well to the play of color that it was determined to use various colors, constantly changing, through the use of dimmers, so as to give a sort of opalescent quality to the illumination. The general flood lighting, except on the pergolas, was white.

Without the colored lights on the statuary the combination of blue inside the pergolas with white on the foliage gave, to a surprising degree, the effect of moonlight; not that it would have been safe to put the comparison to absolute test, but the feeling was very distinctly that of the light from a full moon of unusual brilliancy. The beauties of the sculptures were such, however, that the use of colored lights enhanced the effect to a very considerable degree, though it lessened the true moonlight effect. This, perhaps, was an advantage, because the coloring of the marble dispelled any impression that an imitation of moonlight was intended.

The semblance of moonlight in the pergolas was a difficult problem. The first idea was to throw light from the roof of the house through the roof of the pergolas, but when this was tried it proved to be impracticable. Most of the light was stopped by the vines and what did get through was further stopped by the cross bars of the pergola roof. A short section of one of the pergolas was then lighted with 25-watt lamps, dipped in blue. Aside from the additional wiring cost and the damage which would have been done to the vines, the color of the blue dip did not give the right effect, and the cross shadows were disagreeable, so that plan also had to be abandoned.

FIG. 1. *Day view of the residence of J. L. Breese, showing the arrangement of the projector units on the roof of the porch for lighting this garden, and also in the foreground the two box lights for lighting the fountain.*

FIG. 2.—*The lighting equipment used, showing the construction of the color frames and method of mounting them on the box. This photograph shows the convenience of use of the lighting box.*

FIG. 3.—*Night view of the inner garden, showing the pergolas on each side in the background.*

FIG. 4.—*View of the sidewalk and pergolas as lighted from the units on the roof of the house.*

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The problem was solved by placing an X-ray projector about eight inches below the roof at the house end of each of the side pergolas, and focusing it as sharply as possible on the far end of the pergola, the rays being almost exactly horizontal. A gray-blue screen was placed before each of the projectors. The spilled light from the main beam of the projector "ticked" each of the cross bars of the roof, and the columns were also brought out in a dull blue tone. The illumination was nearly even for the entire length of the pergola, and the focused rays brought out the large amphora at the end of the pergola very distinctly.

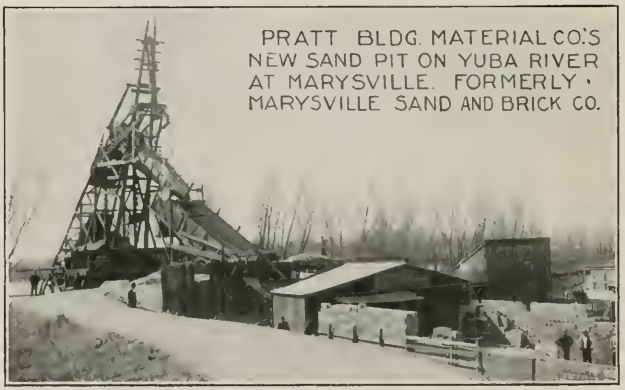
The tendency of the spectators was to walk down the pergolas as they left the porch of the house, so their backs were to the light. Practically nobody faced these lamps at any time, and the few who did found them not uncomfortable because of the blue gelatine screen before them.

Of the clear projectors, one was located on the cross pergola, half way down the long path, so adjusted that the focused beam struck the ground a considerable distance away. The further half of the path was well lighted for its whole length by this projector as was the shrubbery on either side.

Three more projectors were located on the roof of the porch, the central one on a stand with a height of nearly fifteen feet, making the elevation of this projector over twenty-five feet above the ground, which brought it fairly out of the range of vision of a spectator walking toward the house on the central path lighted by the projector. A projector was located on either side of the central one, these being used for flooding the inner garden. They were thrown out of focus to give as wide a spread as possible, and were very effective. They were on ten-foot stands, as, being out of the range of vision of any spectators on the paths, it was not necessary to raise them as high as the central projector.

On the fountain in the inner garden two reflectors were placed on either side so located that they were hidden from the house by one pair of trees, and hidden from the other side by another mass of shrubbery. It was almost impossible to receive any glare from these lamps except when on the narrow path which surrounds the fountain. The lamps on the right side were colored with amber and pale green screens, on the left with blue and rose. Each lamp was on an individual dimmer, the whole battery being operated by a servant while the guests were in the garden, giving an unusual opalescent effect, with a constant though hardly distinguishable change of color.

The guests, on the opening night, assembled on the porch before any of the lights were turned on. Then far down at the end of the long path the vase there began to glow in a deep blue light, which grew more and more brilliant.



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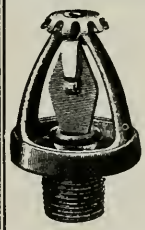

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As the amber lamp was brought up the vase and its surroundings came out in clear white, giving the effect of a magic shrine, utterly surrounded by darkness. Then the colors were varied from blue to amber from time to time. Next the projector on the cross pergola came on, lighting the further half of the path, with the foreground still dark. Following this, the projectors down either pergola, in blue, were brought up, then the inner half of the long path was illuminated and the inner garden flooded. Finally, very slowly, the fountain began to glow in rose and green, gradually coming up until it was the most brilliant feature of the whole landscape. As the spectators watched, the green changed to amber, the rose faded to blue, and the endless combination of ever-changing tones and colors began.

The Electric Range

To date there are close to 2,000 electric ranges in use in California homes. This phase of the business is barely in its infancy, and if in a couple of years the public sees its way clear to purchase this number of ranges, which until recently have largely been in an experimental stage, it is not so difficult to imagine the enormous range business which is awaiting the manufacturer and which is to be done in the next few years.

Claims Patent Infringement

George E. Vandenburgh, who claims to have a patent for a reinforcing bar used in concrete construction, has begun suit in the United States District Court against the Leonard Construction Company and the Willys-Overland Company for damages for the alleged use of his patented device in the construction of a building in San Francisco.

Colusa High School

Colusa will have an $85,000 grammar school building instead of a $65,000 building as first planned, the district having voted an additional $20,000. New plans are being prepared by Wm. H. Weeks, 75 Post street, San Francisco. The building will be two stories and basement and of brick construction, and will have a large assembly hall, gymnasium, class rooms, etc

Officers of Washington Chapter

Following are the new officers elected at the last annual meeting of the Washington State Chapter, A. I. A.: President, Charles H. Bebb, Seattle; first vice-president, Daniel R. Huntington, Seattle; second vice-president, George Gove, Tacoma; third vice-president, L. L. Rand, Spokane; secretary, A. H. Albertson, Seattle; treasurer, Ellsworth P. Storey, Seattle; council, Charles H. Alden.

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The Contractor

HIS TROUBLES AND SOME OTHER THINGS

Justice to the Contractor

THERE has been much discussion lately in engineering and contracting journals regarding the place that equitable specifications have in securing and maintaining harmony between the engineer, or the architect, and the contractor. Some have placed great emphasis on the wording and intention of the specifications, while others have considered the matter one of adjusting the conflicting interests of the two parties through a better understanding of their respective positions. Mr. J. L. Harrison, of Manila, Philippine islands, in discussing this subject in a letter to Engineering Record, has the following to say:

"Friction between engineers and contractors arises from a number of causes, of which the following are possibly the most conspicuous:

"1. Low bidding, with the resulting tendency of contractors to skimp their work in order to avoid serious financial losses.

"2. Careless or crooked superintendents. No contractor of importance can personally supervise all of his projects, and the men whom he selects are naturally more anxious to show profits than they are to follow the specifications.

"3. Incompetent contractors and superintendents, men who, though paid a fair price for their work, are constantly in trouble with the engineer because they do not know the difference between good methods and bad methods, and greatly dislike interference on the part of any engineer.

"4. Incompetent or unscrupulous engineers.

"5. Cloudy or unjust specifications.

"The writer has been engaged on Government work now for about ten years, and, like most engineers, has his share of trouble with contractors, and it is his candid opinion that at least 90 per cent of the friction between engineers and contractors comes under the first three heads mentioned. The average contractor makes two erroneous assumptions—first, that he is always entitled to profit; and, second, that the party of the first part in his contract has no interest except in the general quality of the finished structure.

"The first assumption leads contractors to try to filch a profit when they have been underbid on a job. The second assumption is a frequent cause for the underbidding, for instead of bidding on methods and even materials that are definitely described in the specifications, contractors often bid on something that they honestly enough suppose to be just as good, but which, nevertheless, does not conform with the specifications. Thus not long ago the writer had charge of a concrete bridge job the specifications for which definitely forbade the use of the sand and gravel found in the river over which this bridge was to be built. The only other sand and gravel available had to be hauled nearly ten miles. The man who got the contract claimed that the clause forbidding the use of the local river gravel was unjust. A serious conflict resulted. It was evident that the contractor had examined the local material before he put in his bid, and that he thought it probable that he could 'bluff the engineer out.'

"Another case which the writer had to handle involved the use of brass-plated hardware on a contract calling for solid cast bronze hardware. The contractor said frankly that he had bid on the cheaper hardware, that he thought it was really just as good, and that he felt it was an imposition to ask him to go to the expense of following a specification that he believed to be unnecessary. Of course, some friction, for the change cost the contractor a good deal of money.

"It is true that engineers are sometimes crooked, and, I suppose, often incompetent. But is there any reason for supposing that the standard of honesty is higher among contractors, or any reason for believing that they are less often incompetent? I think not. On the contrary, the long educational training given to the modern engineer makes it distinctly likely that on the average his training is much better than that of the contractors with whom he deals. But as the contractor's financial relation to the job is very different from that of the engineer, he naturally takes every interference very seriously, for interference is usually in the line of demanding higher

standards of work at an added cost to the contractor. The average contractor seems to feel that his interest demands that he maintain the lowest standards that the engineer will permit.

"So, while the writer believes in doing anything that can be done to clarify specifications and make them entirely fair, and agrees with the editors that the practice of writing specifications which are one-sided should be stopped, at the same time he wishes to point out that even this will not eliminate friction between engineers and contractors, because the real cause of most of the friction lies deeper than the specifications.

"Engineers make a great mistake in pretending that an engineer employed by an owner to supervise construction is or can really be an arbitrator between the owner and the contractor. An engineer in such a position is hired to know what the owner wants, and to see that he gets it. If there is friction between the owner and the contractor, either about the nature or the extent of the work, some other engineer or contractor should be called in to arbitrate the matter. The owner's engineer is and ought to be an interested party. Moreover, he ought to know that he is an interested party, and act as an interested party. He would recognize at once the ridiculousness of referring controversies to the contractor's engineer. It is in reality equally ridiculous for him to pretend to be able to arbitrate between the owner and contractor.

"It is a wonderful thing for a young engineer to have an opportunity to deal with a broad-minded, honorable contractor. There are many such. But as long as human nature is human nature, there will always be ignorant, careless and unscrupulous men in the contracting business, and they are not apt to be easy men to do business with. An engineer is the guardian of his employer's rights, and if guarding them requires tact, he should use tact, but if guarding them requires a club, he should never be out of reach of at least a couple of them. I believe strongly in writing clear, fair and complete specifications, but engineers should all recognize that, no matter how clearly specifications are written, getting them carried out will continue to be a man-size job."

Pooling Contracting Equipment

The Montreal Builders' Exchange have had under consideration a scheme by which members who are general contractors may rent to their fellow members surplus equipment. In these days of dullness in the building trade many contractors have expensive plants which they are perforce obliged to store in yards, entailing a certain amount of cost to look after and also charges in the

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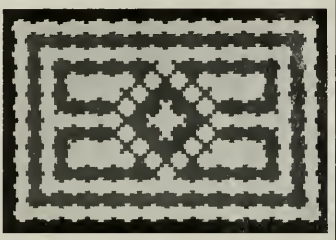

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way of interest on capital. The object is to organize a method by which the various plants can be located in a central yard, and any portion rented to members who require it; or the scheme may be varied by eliminating the central yard, but retaining the idea of renting the equipment. This could be done through the secretary of the Exchange, who would be supplied weekly with lists of the various surplus equipment of the contractors. In the case of a contractor requiring a certain piece of machinery, he will get in touch with the secretary of the Exchange and make inquiries as to whether such machinery is on any of the lists. In the event of the machinery being available, the secretary will give the member who inquires, a description and the name of the member who is desirous of renting the equipment. The two parties are in this way brought together, and it then remains for them to settle the terms on which the rental will be made. The scheme is of advantage to both members or firms; the one is saved the expense of purchasing plant which may be required only for a given job, and the other obtains a rental for machinery which would otherwise be idle.

Modern Politics Has All But Terrorized Capital

By WILLIS POLK, Architect.

Building conditions in San Francisco during the last few years, like those that have prevailed elsewhere, have led to the keenest kind of competition—perhaps keener than ever before known.

These conditions have naturally led to the abandonment of methods usually successful in normal times. This unnatural competition has created a diversion of interests that normally should be mutual, but has now become antagonistic.

Under these abnormal conditions, the real interests of the building community have been gradually sacrificed, so that the individual rather than the whole interest has become paramount. A case in point is the amalgamation of the personal interests of the master masons (brick contractors) and the bricklayers (union bricklayers).

This may all seem to be very good for each of the interested parties, but the real interest lies in this, that what is good for one ought to be good for all. Now if it is good for mechanics and contractors in any one trade to join interest, then it ought to be good for mechanics and contractors in all trades to join interest, and if such a theory is correct then after the completion of such a compact, where would the owners be?

If you once lose the confidence of the owner, or of the investing public, then all parties are bound to suffer. In other words, modern politics has all but terrorized capital. Is labor going to have the assistance of contractors in completing such terrorization, or are we on the verge of a revival of the building business that will make such unnatural combinations unattractive and thus help to restore normal conditions?

San Francisco's Building Growth

Figures by the San Francisco Board of Public Works show that in ten and one-half years, from May, 1906, to May, 1916, San Francisco has expended in building $292,846,885, which, with the possible exception of New York City and one or two of the other large municipalities of the world, is unequaled. It is admitted that the fire contributed greatly to the result, but outside this the record is an astonishing one.

Included in the list are 211 class A buildings, costing $36,207,417; 221 class B at $16,061,228, and 3101 class C at $88,772,859. The number of buildings constructed is 66,278.

The city has spent $6,903,869 on public buildings and there have been constructed on the harbor front 24 new structures at a cost of $1,173,611. The State has expended $848,181. The Exposition buildings cost $9,951,577.

It is estimated that ground values and interior furnishings equal the cost of the buildings.

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PACIFIC COAST WAREHOUSE, STANDARD VARNISH WORKS, SAN FRANCISCO

Standard Varnish Works' New San Francisco Home

THE Standard Varnish Works, known as one of the world's largest manufacturers of high-class varnishes, stains and enamels, is now occupying its new home at 55 Stevenson street, San Francisco. By new home is meant the company's Pacific Coast headquarters. The building is a five-story and basement structure, with fireproof brick curtain walls and interior of heavy timber construction. With more than 8,000 feet of floor space, the company is now in position to carry a stock of sufficient size to supply extraordinary demands, besides being able to care for the business of its regular customers with usual

SAN FRANCISCO EXECUTIVE OFFICES, STANDARD VARNISH WORKS

promptness and satisfaction. The growth of Standard products on the Pacific Coast has been in keeping with the progress made by this company throughout this country, British Columbia and the Hawaiian Islands. With quality back of every brand, coupled with a fixed policy to give its customers service, the secret of Standard success is not difficult to guess. Quality and service have been watchwords in the San Francisco office and their Coast manager, Mr. Edward Millhauser, is yet to find a complaining customer.

The accompanying pictures give a good idea of the size and appearance of the building and splendid warehouse facilities. Situated in the heart of the city's wholesale district, the building is of semi-fireproof construction, having brick walls and wood floors and joists and concrete roof. On the ground floor are the offices of Mr. Millhauser, Pacific Coast and export manager, and Mr. F. T. McHenry, one of the members of the advisory board of the company and who has been identified with the Standard Varnish Works on the Pacific Coast for a number of years. The general sales offices are also on this floor and after the first of the year it is planned to handle the Coast Book of Accounts from here instead of through the Eastern office. This means an addition to the present clerical force. The offices are light and airy and finished in Standard Satinette White Enamel. The entire second, third and fourth floors are stocked with the various products of the company, including Elastica No. 1 for exterior work, Elastica No. 2 for finest interior work, Elastica cabinet finish, Elastica floor varnish, White polishing varnish, Flattine cabinet finish, Kleartone oil stains, Kleartone paste wood fillers, Kleartone shellacs, Satinette White Enamel (a perfect white enamel that will not turn yellow with age and improves with exposure to light and air), Satinette cement undercoat and many other grades. There is a combination freight and passenger elevator to carry one from the ground floor to the basement or upper stories. Bins or shelves are arranged in rows on all floors and each bin holds a case of varnish put up in cans of from one-half pint to five gallons capacity. This arrangement facilitates the convenient handling of stock without the customary delays in locating the particular brand called for by the customer.

On the top floor a laboratory has been fitted up where tests are made and where the architect will find a competent chemist always at his service. Any desired color or combination of colors will be tried out here at the request of the architect or owner. Mr. Millhauser has good cause to feel proud of the Standard's new San Francisco home. No detail has been overlooked to the end that the management will be able to give its customers the best possible service. Mr. Millhauser has been asso-

STANDARD VARNISH WORKS, SHOWING LOWER PART OF SHIPPING DEPARTMENT

ciated with the company in various capacities for twenty-four years. Prior to coming to San Francisco he was in charge of the business in Australia and New Zealand.

The Standard Varnish Works was established in 1870, and incorporated under the present name in 1887, being the first to introduce varnishes for specified purposes, in sealed packages. From a small factory the company has grown to be the largest manufacturers of varnishes, enamels, stains, japans, driers, etc., in the world, with factories in New York, Chicago and Toronto, and branches in London, San Francisco, Paris, Berlin, Brussels and Melbourne.

The parent plant, situated on Staten Island, N. Y., at which are located the extensive research laboratories of the company, consists of forty-five buildings and covers approximately eleven acres, with facilities for the receipt of raw materials and shipment of the finished products, by either rail or water transportation.

There are miles of underground pipes through which raw materials are pumped into storage tanks, on being received. Through others the finished products are driven to storage rooms and there properly aged (an essential feature in the manufacture of high-grade varnishes) before being packed for shipment to all parts of the world.

The other plants of the company are equally efficient, being equipped to supply the trade in the districts in which they are located, with the utmost dispatch, as are also the various branch warehouses and offices of the company.

Review of Recent Books

THE PLANNING OF THE MODERN CITY. Nelson P. Lewis. 87 illustrations, 12 tables. John Wiley & Sons, New York. $3.50 net.

This volume furnishes a much-needed careful and authoritative statement on city planning from the engineer's standpoint, by the chief engineer of the City of New York. It is primarily a practical outline for the city engineers of the country, who, as the author says, are "the first men on the ground in city planning as in city building."

Now that city planning is being seriously taken up through the establishment of permanent commissions in so many California cities and throughout the country, the city engineer often finds himself bewildered by much esthetic and social talk about this new, large and difficult subject, with many quotations of statistics that are largely second hand, and which he finds it difficult and often impossible to verify in any way. Hence he very generally remains unconvinced.

Mr. Lewis has therefore done the country a great service by his careful sifting of all the data which he could obtain and the restatement, after long years of experience, of the following vital topics: The correction of mistakes, elements of a city plan, the transportation system, the street system, parks and recreation facilities, public buildings and civic centers, the economic value of a city plan, the industrial town or district, street traffic, street details—utility and adornment, the railroad in its relation to the street system, restrictions, the environs of the city, garden cities, city planning legislation, progress and methods, financing a city plan, municipal land policies, and the opportunities and responsibilities of the municipal engineer. He says: "It is the hope of the author that municipal engineers will find the following pages of some value in bringing to them a somewhat keener realization of their part in, and responsibility for, the constructive work of city planning as well as city building. Most of the literature of this subject has been contributed either by architects, who emphasize its architectural or artistic side and appear to consider it an architectural problem, or by students of city government, who seem to regard it as an administrative problem. This volume is just as frankly written with the idea that the fundamental problems of city planning are, and from their very nature must be, engineering problems. Subjects will be discussed that are not generally considered as falling within the scope of the engineer's activities, but they are all subjects with which one who is responsible for the city plan should be familiar."

We can hardly agree with Mr. Lewis that the fundamental problems of city planning are any more engineering problems than they are social or esthetic problems. To get the opposite point of view one has but to read "Town Planning in Practice," by Raymond Unwin, the distinguished English architect and town planner, who designed the finest garden cities of England. But for the practical student of city planning the possession of Mr. Lewis' and Mr. Unwin's books should go far towards setting him on the right track.

The illustrations in Mr. Lewis' book are extremely valuable and appeal because they are largely collected from recent improvements in the United States. We venture the opinion, however, that a great many more inspiring and more forceful examples than those given could have been found, if good architecture and the esthetic considerations that appeal to all men had been farther considered.

ARMS AND THE BOY. By Colonel L. R. Gignilliat, Superintendent of Culver Military Academy. Illustrated. Bobbs-Merrill Company, Indianapolis. $1.50 net.

Whether we believe in military training for boys or not, we cannot help finding great interest and stimulation in this vigorous and complete statement of the physical and other training given by military schools and high schools throughout the country. It has a frank appeal and is written by one of whom the Secretary of War says: "I know of no one whose success in applying military education would entitle him to speak with more authority." The illustrations are splendid.

JOSEPH PENNELL'S PICTURES OF THE WONDER OF WORK. 52 lithographic plates. J. B. Lippincott Company, Philadelphia. $2.00 net.

No draftsman can look at these splendid reproductions of etchings, engravings, lithographs and other studies without a conscious start of interest. For Joseph Pennell sketches only the big compositions, the big things of life and work, and his skillful indication is full of the inspiration of an art that lives and will continue to live. Of these particular sketches he says: "Work today is the greatest thing in the world, and the artist who best records it will be best remembered. * * * Art which shows life and work will never die, for such art is everlasting, undying, 'the science of the beautiful.'"

The sketches cover a period from 1881 to 1915, during which time the author visited many parts of the world. Genoa, with its commerce laden harbor; Venice, with its Campanile; Valenciennes, with

its mills, old and new; Essen, with its Krupp works; London, Hamburg, Berlin, are a few of the themes, the possibilities of which need not be described.

Books Received—To Be Reviewed Later

Engineering as a Career, edited by F. N. Newell, D. Van Nostrand Co. $1.50.

The Lure of the Land, Harvey W. Wiley, The Century Company, $1.40.

California Garden Flowers, Wickson, Pacific Rural Press, San Francisco. $1.50.

Heraldry, Illustrated, W. H. Abbott, Wm. T. Comstock Co.

Problems of Community Life, Seba Eldridge, Thos. Y. Crowell Co., New York.

The Community and the Citizen, Arthur Wm. Dunn, D. C. Heath & Co.

Town Planning, Geo. Cadbury, Jr., Longmans, Green & Co. $2.25 net.

The Tourist's California, Ruth Kedzie Wood, Dodd Mead & Co. $1.25 net.

Mechanical Equipment of Buildings, Vol. 1, Harding & Willard, Jno. Wiley & Sons, Inc.

Swimming Pools, Allen & King, Domestic Engineering. 75c.

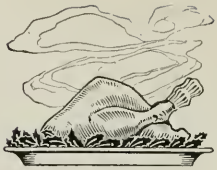
The Law of Architecture and Building, Clinton H. Blake, The Wm. T. Comstock Company.

Parks, Their Design, Equipment and Use, Geo. Burnap, Lippincott. $6.00.

"Magnite Enamel"

A Fresno architect wants to know who manufactures the "Magnite Enamel" that was used on the interiors of the Mary's Help and French hospitals in San Francisco.

"Magnite Enamel" is made by Magner Brothers, 419 Jackson street, San Francisco, who also make various other paint and varnish specialties, including Floratone, flat wall paint, used on the Harbor hotel, Fife building, and Municipal Detention Home, also the concrete paint used on the Western Pacific pier, Heald's Business College and other structures in San Francisco and vicinity.



It gives us great pleasure to pause for a moment in the mad rush of business to wish you all—

A Very Merry Xmas and A Happy New Year

Meese & Gottfried Company

Conveying, Elevating, Screening and Mechanical Power Transmittiog Machinery

SAN FRANCISCO LOS ANGELES
PORTLAND SEATTLE

Lincoln Manor Home

Plans have been completed by Benjamin S. Herschfeld, architect, 251 Kearny street, San Francisco, for a frame and stucco house for Edgar C. Levey, to be erected in Lincoln Manor at a cost of $5,500.

OUR LEADING CIGAR BRANDS

FLOR DEL MUNDO

ALL HAVANA TOBACCO

FLOR DE UPMANN

A MILD, PLEASING BLEND

Goldberg, Bowen & Co.

SAN FRANCISCO OAKLAND

The Hardwood Situation

By C. H. WHITE.

MUCH has been said recently by the Pacific coast press about California laurel and the unusual demand for this wood. It is a fact that California laurel is fast supplanting the use of the more expensive hardwoods such as birch, which costs (f. o. b. San Francisco) from 30 per cent to 50 per cent more than laurel. The fact that California laurel can be finished to show the same, or better results than birch and costs so much less money, makes this hardwood more popular than ever and the demand is growing.

* * *

One feature of the present hardwood situation is the quantity of Genezero lumber on the market. Some of the finest buildings in San Francisco have used this wood for their interior trim. It has always been used extensively in homes and it is one of the best cabinet woods on the market. Genezero (sometimes called Jenisero, or Peruvian mahogany) is much lower in price than most similar woods, and compares in that respect to quarter sawed oak. At present there is probably among the different San Francisco yards 500,000 feet of dry Genezero in fine condition for use. When finished natural, Genezero gives the soft neutral brown tones so much desired at the present time, and the existence of such a large stock of thoroughly seasoned lumber in the market should make this wood a most desirable one.

* * *

Lumber men all over the country have great hopes of a remarkable increase in business after the cessation of European hostilities. In fact, the United States Federal Trade Commission has taken up the matter of handling this European trade and is seeking competent men to be sent to Europe to investigate the different markets, and the best manner of handling the trade which everyone expects will come in a large volume after the war. This, of course, will have a direct bearing on the domestic hardwood market, and undoubtedly cause a rise in prices.

* * *

Before the war the export of American hardwood such as oak, ash, hickory, walnut, gum, etc., to Great Britain, France, Germany and Italy, was enormous. This trade has been entirely destroyed. Great Britain put an embargo on the importation of cabinet woods. The market was therefore disturbed at the opening of the war but has gradually adjusted itself. The resumption of European exports, however, will undoubtedly have a most stimulating effect upon the trade.

C. Roman Now Handling Master Builders Concrete Hardner

Master Builders Concrete Hardner will be handled in San Francisco the coming year by the C. Roman Co., with offices in the Sharon building. By placing the distribution of this material in the hands of a wide-awake agency, the use of the Master Builders Method will undoubtedly become more extensive than ever. A contract for the agency of Master Builders was closed last month, Mr. Roman being given the exclusive selling privileges for central and northern California for one year.

The Master Builders Method of concrete floors has been used in 645 factories, 32 breweries, 33 power stations, 46 schools, 17 railroad buildings, 144 printing plants, 11 hospitals, 56 bakeries, 15 hotels, 25 creameries and 22 office buildings. The Ford automobile plants are equipped throughout with the material.

Master Builders Method is a formula for making concrete floors wearproof, dustproof and waterproof. The material used in connection with Master Builders Method is a metallic aggregate, manufactured uniformly at all times. There is nothing about Master Builders Concrete Hardner that in any way changes the nature of concrete. It is a hardener, binder and filler.

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Also exclusive California agents for the
STERLING MOTOR TRUCK CO.,
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A complete stock of these trucks from 2½ to 7 tons in our San Francisco warehouse for quick delivery.

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Sloan Valves Regulate Themselves

The Sloan Valve company reports greatly increased business throughout the country with their Coast sales gaining steadily in volume. This company manufactures that excellent specialty, the Royal Flush Valve, which is reported to be gaining in favor everywhere because of its great merit.

It is said of the Sloan valves that they require no regulation for varying or inconstant water pressures from five pounds upward and that they cannot be held open, which latter feature insures a great saving in water.

As the tendency toward the use of high-grade plumbing equipment by Pacific Coast architects has become more pronounced of late, the Sloan Valve Company have established a branch office at San Francisco in charge of Mr. T. R. Burke, who looks after their Coast interests. Mr. Burke's address is 624 Wells Fargo building.

Oakland Architect Busy

C. H. Miller, First Savings Bank building, Oakland, is quite busy making sketches for prospective work, including the following:

A three-story class "C" apartment house containing twenty-four three and four-room apartments, to cost in the neighborhood of $30,000.

A two-story frame apartment house that will contain forty three and four-room apartments, at a cost of about $40,000.

A two-story brick garage building, to cost about $20,000.

Sketches are also being made for a three-story frame and plaster store and apartment house, to be erected in San Francisco, at an estimated cost of $8000.

Contract for Government Store House

Grace & Bernieri, Claus Spreckels building, San Francisco, have been awarded the contract for the construction of a two-story reinforced concrete store house and wooden tramway for the United States Government at Benicia. Contract amounts to $23,495. The same firm has been given a contract to build a new cottage at the Agnew State hospital.

Astor Court Apartments New York City
Every bath a "KOHLER" in this building
Marc Eddy's Sons Building Contractors
Chas. A. Platt, Architect

Superior excellence and matchless beauty

Because KOHLER enameled Bath Tubs, Lavatories and Sinks are notable for excellence of materials and workmanship, as well as for the beauty of the enamel and the hygienic designs, they are chosen for houses, apartments and hotels of the highest class.

KOHLER WARE

—Always of one quality—the highest

Owing to manufacturing economies we are able to maintain reasonable prices on KOHLER WARE of all patterns. KOHLER Bath Tubs, Lavatories and Sinks are available for moderate priced buildings as well as for those demanding the most elegant equipment.

Architects who wish to avoid the possibility of making mistakes in specifying enameled plumbing ware select KOHLER products, notable for their *unvarying excellence.*

"It's in the Kohler Enamel"

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The "Viceroy," Plate V-12
[Patent Applied For]

Kalameined vs. Hollow Metal Trim

The Dahlstrom Metallic Door Company of Jamestown, N. Y., has published a booklet called "Kalameined versus Hollow-Metal Doors and Trim," in which the "Deadly Parallel" is given to show the superiority of genuine hollow metal construction over the Kalameined process. Here is an example:

Fire Resistance:	Fire Resistance:
The Kalamein door must fail under intense heat, because the thin metal with which it is covered quickly becomes red hot and the wood core thus begins to char, producing gases which soon generate sufficient pressure to open the seams and admit oxygen which at once produces flame. In an exceedingly short time the wood core will be disintegrated and its strength gone. It is apparent that at this point it must fail and go down before the pressure due to gases arising from the fire. Very often plate glass windows are blown out by such gases long before the fire reaches the glass itself. The metal covering is not self-supporting and will not stand up when the strength of the wood core is gone. The Kalamein door is an inefficient fire retardant.	The Hollow Steel door cannot fail when exposed to intense heat, because it does not contain one particle of combustible material. It is improbable that sufficient inflammable material is contained in one room to generate a heat of such intensity as to fuse the heavy steel of which the door is constructed. It cannot, will not expand or buckle in such a manner as to allow flame to pass between the door and frame, because it is so constructed that excessive expansion does not alter its efficiency. That this is an accomplished fact is amply proven by severe fire tests held under the observation of competent experts in the United States and Europe. The Hollow Steel door is a dependable and positive fire stop.

Dahlstrom products have been used on the Pacific coast in the Pacific Mutual Life Insurance Company's building, Los Angeles, Parkinson & Bergstrom, architects, Hearst building, San Francisco; Kirby, Petit & Green, architects; Royal Insurance building, San Francisco; Howell & Stokes, architects, Oakland Bank of Savings, Oakland; Dickey & Reed, architects; Hibernian Bank building, San Francisco; Albert Pissis, architect, and the Solano county court house, Fairfield, E. C. Hemmings, architect.

In its trade literature the Dahlstrom company calls attention to the fact that its products can now be obtained expeditiously and at a reasonable cost, therefore there is no longer any excuse for not adequately fireproofing every opening in a building, at the same time retaining an elegant and permanent finished appearance.

Architects are invited to make use of the Dahlstrom service, which will be cheerfully rendered in assisting to solve the problems of permanent interior fireproofing—"the kind that safeguards life and contents of a building," and makes it fireproof in fact as well as in name.

You Wouldn't Omit the Bathroom —

from any house you're designing because there is a public wash-room in a nearby hotel. Yet this would be just as logical as omitting gasolene and lubricating oil storage equipment from the plans of a private garage because there is a public filling station just a few blocks away.

The bathroom is a matter of convenience *only*, but

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Gasolene and Oil Storage Systems

have, in addition to convenience, many other desirable advantages.

A Bowser keeps the gasolene free from evaporation, so that it positively retains its original power and "pep"—also all water and impurities are removed by a *real* filter. And it's the vim kept in and the impurities kept out of the gas that determines just how near "right" an engine will run.

Then there's the measuring devices that show *exactly* how a gasolene bill stands—not *about* how it stands.

Furthermore, a machine can't render the best service when it's fed gritty and impure lubricating oil. This one feature alone explains why our lubricating outfits are paying investments for private garage owners.

We haven't space to enumerate all of the Bowser advantages here, but why not have one of our representatives point them out to you as they apply to any of your particular problems, or let us send literature concerning the details?

Even if nothing could be saved by purchasing in quantities, isn't it worth something to have the *right* kinds of gasolene and oils *where* and *when* needed?

S. F. BOWSER & CO., Inc.

Engineers, Manufacturers and Original Patentees of Oil Handling Devices

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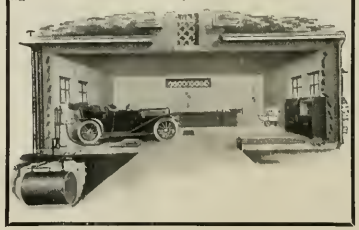
Sales offices in all centers—Representatives everywhere